Roofs

IDIQ Specifications

Prepared for

366th Civil Engineer Squadron
1030 Liberator Street
Building 1300
Mountain Home, Idaho 83648-5442
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PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Work covered by contract documents.

B. Use of premises.

C. Utilities.

D. “As-Built” Drawings (Record Drawings).

1.02 WORK COVERED BY CONTRACT DOCUMENTS:

A. The following is a summary of work for IDIQ CONTRACT ROOFS on buildings located at MOUNTAIN HOME AFB IDAHO, and two (2) remote sites, Saylor Creek and Grasmere site. The project shall include but is not limited to:

1. Repair/replace roofs as indicated in the:

    a. Standard details, (See Appendix B)

    b. Specifications and

    c. Roof Plans (issued with each delivery order).

2. Remove and dispose of all waterproof membranes as indicated.

3. Remove and dispose of all flashing as indicated; and reinstall new flashing as indicated.

4. Inspect for damage or replace Insulation as indicated.

5. Inspect roof decking for damage.

6. Bring to the attention of the Contracting Officer (CO) all damage noted.

7. Install a new roof membrane, new flashing and new insulation (as indicated) with proper drainage to prevent ponding of water on the roof.

8. Provide demonstration that proper roof drainage has been achieved to satisfaction of C.O. before acceptance of the finished roof(s).

9. Carefully remove mechanical (or other) roof mounted equipment, store in a protected area during roof installation and reinstall on the roof with all necessary weatherproofing and in the same operational conditional as prior to removal.

10. All hazardous materials used in accomplishment of work must be accompanied with MSDS.

B. The above description of work is for the purpose of general information only and is not intended to include and describe every feature or item of work or to completely define the scope of work.

1.03 USE OF PREMISES

A. During the performance period, the facility will be occupied. Coordinate with Civil Engineering and cooperate with the using organization in scheduling operations to minimize conflict and to facilitate government usage.

1.04 UTILITIES:

A. Water, gas, and electricity are available to the Contractor from the Government's existing system outlets. Utilities will be furnished at no cost to the Contractor, except for telephone. Contractor is responsible for connections and disconnection to existing Government utilities.

1.05 "AS-BUILT" DRAWINGS (RECORD DRAWINGS):

A. Maintain at the job-site when required, two sets of full size contract drawings, marking in red to show all variations between the construction actually provided and the requirements indicated or specified in the contract documents, including buried or concealed construction.

B. Where a choice of materials or methods is permitted or where variations in scope from that of the original contract are authorized, mark the drawings to define the construction actually provided.

C. Use standard drafting practices to represent such changes and include supplementary notes, legend, and detail as necessary to clearly portray the as-built construction.

D. On completion of the work, deliver to the Contracting Officer both sets of marked drawings for approval and acceptance.

E. When contractor is required to provide design, provide drawings on computer disk in AutoCAD format to contracting officer at project completion along with both sets of marked drawings.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01031 - INTERFACING OF NEW AND EXISTING WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Quality of work and materials to be used/reused.

B. Protection of new and existing work.

C. Transition between existing and new work.

1.02 QUALITY OF WORK:

A. Assign the work of moving, removal, cutting, and patching to trades qualified to perform the work in a manner to cause the least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum material necessary and avoid damage to adjacent work. Cut finish surfaces such as concrete, tile, gypsum wallboard, plaster, wood rails, or metal surfaces in a straight line or at a natural point of division.

C. Perform cutting and patching as specified in Section 01045.

PART 2 - PRODUCTS

2.01 SALVAGED MATERIALS: Do not incorporate salvaged or used material in new construction except as indicated and/or with approval of the Contracting Officer.

2.02 PRODUCTS FOR PATCHING, EXTENDING, AND MATCHING:

A. Provide same products or types of construction as that in existing structure, as needed to patch, extend, or match existing work.

B. Generally, Contract Documents will not define products or standards of workmanship present in existing construction. Determine products by inspection and any necessary testing.

PART 3 - EXECUTION

3.01 PROTECTION:

A. Protect all existing structural members, finishes, facility systems and equipment that are to remain. Also provide temporary enclosures, waterproofing, heating, or other means to protect remaining existing work and new work from damage by weather or temperature/humidity extremes.

B. Provide temporary enclosures as specified in Section 01500 to separate work areas from existing building and from areas occupied by Government, and to provide weather protection.

3.02 PERFORMANCE:

A. In addition to demolition specified in Section 02110, and that specifically shown, cut, move, or remove items as necessary to provide access or to allow alterations and new work to proceed. This includes:

1. Repair or removal of hazardous or unsanitary conditions

2. Removal of items serving no useful purpose, such as abandoned piping, conduit and wiring, unless otherwise indicated.

3. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.

4. Cleaning of surfaces and removal of surface finishes as needed to install new work and finishes.

B. Patch, repair, and refinish existing items to remain to the specified condition for each material with a transition to adjacent new items of construction.

3.03 DAMAGED SURFACES: Patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections with matching material.

A. Provide adequate support of substrate prior to patching the finish.

B. Refinish patched portions of painted or coated surfaces to produce uniform color and texture over entire surface.

C. If existing surface finish cannot be matched, refinish entire surface to nearest intersections.

3.04 TRANSITION FROM EXISTING TO NEW WORK:

A. When new work abuts or finishes flush with existing work, make a smooth transition. Patched work shall match existing adjacent work in texture, color, and appearance so that the patch or transition is invisible at a distance of five feet.

B. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface.

END OF SECTION

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Requirements and limitations for cutting and patching of work

B. Cutting, fitting, and patching to complete work and to:

1. Fit several parts together, to integrate with other work.

2. Uncover existing work to install new work.

3. Remove and replace defective and nonconforming work.

4. Remove samples of installed work for testing.

5. Provide openings in nonstructural elements for penetrations of mechanical and electrical work.

1.02 SUBMITTALS:

A. Submit a written request to the Contracting Officer no less than seven (7) calendar days in advance of cutting or alteration which affects:

1. Structural integrity of any element of project

2. Integrity of weather-exposed or moisture-resistant element

3. Efficiency, maintenance, or safety of any operational element

4. Visual qualities of sight-exposed elements

5. Work of Government.

B. Include the following in the request:

1. Identification of project

2. Location and description of affected work

3. Necessity for cutting or alteration

4. Description of proposed work, tools, equipment, and shoring.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Use the same material as the original installation, unless specifically indicated otherwise in the drawings and technical sections of the specifications.

B. For any change in materials, submit a request for use of “or equal” products/materials in accordance with Section 01300.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Inspect existing conditions including elements subject to damage or movement during cutting and patching.

B. After uncovering the roof, inspect conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION:

A. Provide supports to assure structural integrity of surroundings. Also provide devices and methods to protect other portions of project from damage.

B. Provide protection from elements for areas which may be exposed by work.

3.03 PERFORMANCE:

A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.

B. Restore damages with new products in accordance with contract requirements.

C. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersections. Refinish entire unit when the surface is part of an assembly.

END OF SECTION

SECTION 01060 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Regulatory Codes.

B. Air Force Regulations

C. Permits.

1.02 REGULATORY CODES: The latest editions of Federal, State, Industry, and local codes which govern this work include, but may not be limited to:

A. Federal:

1. Part 1926 - Chapter of Title 29, Code of Federal Regulations.

2. Part 192 - Chapter of Title 49, Code of Federal Regulations.

3. Corps of Engineers Safety and Health Requirement Manual, EM385-1-1

4. Part 745 – Chapter of Title 40, Code of Federal Regulations.

1.03 AIR FORCE REGULATIONS: The latest editions of the following Air Force Regulations shall apply to this work:

A. MIL Handbook 1190, Facility Planning and Design Guide.

B. Air Force Safety and Health Standard: AFR 127-12, Air Force Occupational Safety and Health Program, and applicable standards.

1.04 PERMITS:

A. Apply for and obtain the following permits, in addition to any other required permits, as applicable:

1. Disposal of Hazardous Materials.

2. Welding.

B. Contractor is responsible for payment of any fees associated with acquiring the required permits and should reflect those costs in his/her bid proposal under the applicable line item.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01080 - FIRE PROTECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Responsibility

B. Fire Prevention Rules.

1.02 RESPONSIBILITY:

A. Base Fire Chief or his/her representative will attend pre-construction conferences to brief contractors on pertinent fire regulations and to provide guidance for fire safe operations during contract performance. Fire prevention guidance will be furnished to the Contractor for briefing his/her personnel.

B. It is the responsibility of any person who discovers a fire to report it immediately, even when it is extinguished without the aid of the Fire Department. To do this:

1. Sound the alarm locally by activating the installed fire alarm or by shouting to notify the occupants.

2. Report the fire by dialing the Base emergency number (911).

3. Give the Fire Department the following information: Building number, name of person reporting the fire, type of fire (building, grass, automobile, etc.), and exact location of the fire in the building (north end, south end, etc.).

1.03 FIRE PREVENTION RULES:

A. Smoking:

1. Do not use cigars, cigarettes, matches, or mechanical lighters in any building, except in areas specifically designated as "Smoking Area".

2. Smoking is not permitted within 50 feet of the repair dock, paint shops, gasoline storage and dispensing areas, and motor maintenance shops.

3. Dispose of smoking materials in special noncombustible receptacles at the close of business or upon cessation of operations each day.

4. Smoking is prohibited in any facility or area wherein any painting operation is being accomplished. Smoking is permitted in designated areas only.

B. Non-explosion proof heaters and all open flame heaters are prohibited for use in any facility or area where volatile vapors are present or may accumulate.

C. Electrical:

1. During Fire Prevention inspections conducted by the Base Fire department, all appliances deemed unsafe and connected to an electrical distribution system will be disconnected from the electrical system and not be reconnected until approved by the Contracting Officer. The Base Fire Department will perform periodic inspections to verify compliance.

D. Housekeeping:

1. Remove trash from buildings at the end of the workday.

2. Use only noncombustible trash containers.

3. Ensure trash does not accumulate on the floors, in attics, or underneath stairwells of buildings. Do not use attics and areas underneath stairwells for storage without prior written approval of the Base Fire Chief.

4. Locate outdoor trash receptacles at a reasonably safe distance from buildings. In no instance will trash, including scrap lumber, be stacked less than 15 feet from any building.

5. Keep rags in a metal container with metal lid. Properly mark containers stating contents.

E. Flammable Liquids:

1. Store flammable liquids only in buildings designated and approved for that purpose. Prominently post "Flammable" and "No Smoking" signs.

2. Do not store gasoline in any building without approval from the Base Fire Chief.

3. Limit any supplemental supply of flammable liquids kept on the premises to the amount necessary for one day's use. Keep this supply in approved safety cans which are stenciled with the name of contents and the word "FLAMMABLE".

4. Locate all paint storage sheds at least 50 feet from any building.

5. Perform all spray painting in compliance with established safe practices.

F. Liquid Fuel Powered Equipment:

1. Maintain adequate ventilation in all areas when power equipment is to be used and where an accumulation of explosive gases is likely to occur from the use of power equipment.

2. Do not park privately owned vehicles in any building or structure other than those designated and approved for this purpose.

G. Do not shut off water mains and fire hydrants, nor perform any maintenance that will interfere with the water supply on the Base without first obtaining permission from the Base Fire Department.

H. Arc Welding, Torch Welding, Cutting, and Brazing:

1. Obtain permission and Welding Permit from the Base Fire Department for open flame work.

2. Only certified welders may operate welding equipment.

3. Inspect all equipment daily for damage, loose connections, or unsafe conditions.

4. Station fire extinguishing equipment near the welding location.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01090 - REFERENCE STANDARDS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Applicability of Reference Standards

B. Provision of Reference Standards at site

C Source and acronyms used for Reference Standards in Contract Documents.

1.02 APPLICABILITY OF REFERENCE STANDARDS:

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Publications listed in the various specification sections form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

C. Use the latest standard, except when a specific date is specified.

D. Disregard payment provisions contained in any portion of the referenced specifications and standards.

1.03 PROVISION OF REFERENCE STANDARDS AT SITE: When required by individual specification sections, obtain a copy of the standard. Maintain a copy at the job site during submittals, planning, and progress of the specific work until completion.

1.04 SOURCE FOR REFERENCE STANDARDS:

AABC Associated Air Balance Council
1518 K St., NW
Washington, DC 20005

AASHTO American Association of State Highway and Transportation Officials
444 N. Capitol St., NW, Suite 249
Washington, DC 20001

ACI American Concrete Institute
P.O. Box 19150
Detroit, MI 48219

ACPA	American Concrete Pipe Association 8300 Boone Blvd., #400 Vienna, VA 22182
ACPPA	Asbestos Cement Pipe Producers Association 1745 Jefferson Davis Highway, Suite 406 Arlington, VA 22202
ADC	Air Diffusion Council One I11. Ctr #200 111 E. Wacker Dr. Chicago, IL 60601
AGA	American Gas Association 1515 Wilson Blvd. Arlington, VA 22209
AISC	American Institute of Steel Construction One E. Wacker Dr., Suite 3100 Chicago, IL 60601-2001
AITC	American Institute of Timber Construction 11818 SE Mill Plain Blvd., Suite 407 Vancouver, WA 98684
AMCA	Air Movement and Control Association 30 West University Dr. Arlington Heights, IL 60004
ANSI	American National Standards Institute 11 West 42nd St. New York, NY 10036
APA	American Plywood Association S7011 South 19th Street P.O. Box 11700 Tacoma, WA 98411-0700
API	American Petroleum Institute 1220 L St., NW Washington, DC 20005
AREA	American Railway Engineering Association 50 F St., NW, Suite 7702 Washington, DC 20001

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers 1791 Tullie Cir., NE Atlanta, GA 30329
ASME	American Society of Mechanical Engineers 22 Law Dr., Box 2300 Fairfield, NJ 07007-2300
ASNT	American Society for Non-destructive Testing 4153 Arlingate Plaza Columbus, OH 43228-0518
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWI	Architectural Woodwork Institute P.O. Box 1550 Centreville, VA 22020
AWS	American Welding Society P.O. Box 351040 Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Denver, CO 80235
CFR	Code of Federal Regulations Order from: Superintendent of Documents Government Printing Office Washington, DC 20402-9371
CRSI	Concrete Reinforcing Steel Institute 933 No. Plum Grove Rd. Schaumburg, IL 60173-4758
CS	United States Department of Commerce Standard Order from: National Technical Information Service 5285 Port Royal Rd. Springfield, VA 22161
DIPRA	Ductile Iron Pipe Research Association 245 Riverchase Parkway East, Suite O Birmingham, AL 35244

FAA Federal Aviation Administration
Department of Transportation
Order from:
Superintendent of Documents
Government Printing Office
Washington, DC 20402-9371
For documents offered at no cost, order from:
Dept. of Transportation
ATTN: M443.2
400 Seventh St., SW
Washington, DC 20590

FS Federal Specifications
Order from:
Standardization Documents Order Desk
Bldg 4, Section D
700 Robbins Ave.
Philadelphia, PA 19111-5094

FTM-STD Federal Test Method Standards
Order from:
Standardization Documents Order Desk
Bldg 4, Section D
700 Robbins Ave.
Philadelphia, PA 19111-5094

MS Military Specifications (MILSPEC)
Standardization Documents Order Desk
Bldg 4, Section D
700 Robbins Ave.
Philadelphia, PA 19111-5094

MSS Manufacturers' Standardization Society of the Valve and Fittings Industry
127 Park St., NE
Vienna, VA 22180

NACE National Association of Corrosion Engineers
P.O. Box 218340
Houston, TX 77218-8340

NBS National Bureau of Standards
(U. S. Department of Commerce)
Gaithersburg, MD 20234

NEMA National Electrical Manufacturers' Association
2101 L St., NW
Washington, DC 20037-1526

NFPA	National Fire Protection Association P.O. Box 9146 Quincy, MA 02269
NSF	NSF International 3475 Plymouth Rd. P.O. Box 130140 Ann Arbor, MI 48113-0140
NWMA	National Woodwork Manufacturers' Association (Now NWWDA)
NWWDA	National Wood Window and Door Association 205 West Touhy Ave Park Ridge, IL 60068
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) Order from: Superintendent of Documents Government Printing Office Washington, DC 20402-9371
SMACNA	Sheet Metal and Air-Conditioning Contractors' National Association P.O. Box 221230 Chantilly, VA 22022
SSPC	Steel Structures Painting Council 4400 Fifth Ave. Pittsburgh, PA 15213-2683
UBC	Uniform Building Code International Conference of Building Officials 5360 South Workman Mill Rd. Whittier, CA 90601
UBPPA	Uni-Bell PVC Pipe Association 2655 Villa Creek Dr., Suite 155 Dallas, TX 75234
UL	Underwriters' Laboratories, Inc. 333 Pfingston Rd. Northbrook, IL 60062
UPC	Uniform Plumbing Code International Conference of Building Officials 5360 South Workman Mill Rd. Whittier, CA 90601

WCLIB West Coast Lumber Inspection Bureau
P.O. Box 23145
Portland, OR 97223

WWPA Western Wood Products Association
Yeon Bldg.
522 SW 5th Ave.
Portland, OR 97204-2122

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Procedures

B. Proposed “Or Equal” Products/Materials.

C. Samples.

D. Construction Progress Schedules.

E. Shop Drawings

F. Product Data

G. Certificates.

H. Equipment Data Submittals

I. Manufacturers’ Detailed Instructions

J. Materials Furnished under Standard Specifications.

1.02 PROCEDURES:

A. Deliver all submittals to the Contracting Officer within 10 calendar days after the Notice to Proceed, unless otherwise specified.

B. Transmit each item using AF Form 3000. Identify project, Contractor, subcontractor, major supplier; identify pertinent drawing sheet and detail number, and specification section number, as appropriate. Identify deviations from contract documents.

C. Submit initial progress schedules in triplicate within 10 calendar days after commencement of work, if required by delivery order. After review by the Contracting Officer, revise and resubmit as required.

D. Government’s review will be limited to determination if submittals are in conformance with design concept and general requirements of the project. Approval by the Government shall not absolve the Contractor from his/her responsibilities for specific performance of the item or items submitted.

E. The government will not accept submittal from sub-contractor or material supplier. Check submittals for completeness, accuracy for construction purposes, and conformance with contract requirements and indicate concurrence on each submittal.

F. Submittals for a specific product/material make, model, formula, etc., will be required only upon first use under the provisions of the contract, not for each subsequent task order issued. Unless otherwise specified.

1.03 PROPOSED "OR EQUAL" PRODUCTS/MATERIALS:

A. Submit proposed "or equal" products/materials to the Contracting Officer within 10 calendar days after the date of Notice to Proceed is issued.

B. Submit proposed "or equal" products/materials relating to a particular subcontract or trade at one time.

C. List the following information:

1. Proposed item(s).

2. Amounts for all cost variations.

3. Product Data, and all information required to determine suitability of the proposed product.

4. Impact on other work.

5. Additional information as requested by the Contracting Officer.

D. Approval or rejection of "or equal" products/materials is at the Contracting Officer's discretion, whose judgment will be final. Factors for acceptability of proposed items are as follows:

1. Quality of materials, structural strength, and details of construction or fabrication

2. Performance and function

3. Appearance and finish

4. Identify impact on other work.

E. Do not resubmit any previously rejected proposed items.

F. Use of approved “or equal” products/materials does not relieve the Contractor from compliance with the Contract Documents.

G. Do not install “Or equal” products/materials without prior approval.

1.04 SAMPLES:

A. When required by individual specification sections, submit samples that fully illustrate functional characteristics of the product, complete with integral parts and attachments.

B. Include identification on each sample, giving full information

C. Samples will be retained by the Contracting Officer, except in those instances where the specifications permit use of the sample in the actual work.

D. Provide field finishes at project as required by individual specification sections. Install sample complete and finished.

1.05 CONSTRUCTION PROGRESS SCHEDULE: The Construction Progress Schedule if required shall consist of a minimum of one work element for each applicable division of the specification except Division One. (AF Form 3064)

1.06 SHOP DRAWINGS:

A. When required by individual specification sections submit three (3) copies. The Government will retain these copies.

B. Persons competent and experienced in the trade involved shall prepare shop drawings. Drafting skill is not a requirement but accuracy and completeness of Drawings shall reflect field measurements and conditions and show the relationship of the item to adjacent materials.

C. “Shop Drawings” are defined as drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.

D. Shop drawings are not part of the contract documents. Contract documents are prepared under the guidance of the design professional. Shop drawings by long standing tradition in the construction industry are usually prepared by trades people who are not registered architects or engineers.

E. The purpose of shop drawings is not to depict or define design but it is to show how the construction document or requirements are to be implemented.

1.07 PRODUCT DATA:

A. If required by individual specification sections, submit in quadruplicate, product data that indicate compliance to listed standards.

B. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the work. Include manufacturers' installation instructions when required by the specification section.

C. Trade names of specific products used in this specification are used for purposes of defining general quality and performance. They are not used to preclude the use of products of equal characteristics by other manufacturers. The Government reserves the right to determine equality.

D. Submit to the Government with any request for approval of substitutions, complete data including performance and chemical makeup for both the specified and proposed item.

1.08 CERTIFICATES:

A. Each certificate required by the Contract Documents shall be signed by an officer, agent, or individual lawfully authorized to execute the certificate and such authority shall be cited in the certificate by description, title, or other acceptable evidence.

B. Certificates shall be sworn and notarized as to correctness and validity of the contents, and copies shall be notarized to be true copies. Deliver all certificates to the Contracting Officer.

1.09 EQUIPMENT DATA SUBMITTALS:

A. Equipment data submittals, including complete technical, performance, and catalog data, are required for every mechanical and electrical equipment item proposed for the Work, each submittal bound, indexed, and containing information and data as specified in paragraph PRODUCT DATA.

B. Include in each submittal information covering performance and operating curves, ratings, capacities, characteristics, power efficiency, each manufacturer's standard guarantees and warranties with the terms and conditions fully described, and all other information to fully illustrate and describe the items as may be specified or required for approval.

C. Submit in sets which cover complete systems of functioning units.

1.10 MANUFACTURERS' DETAILED INSTRUCTIONS:

A. Submit the manufacturers' detailed preparation and installation instructions for various materials specified to be installed in accordance with such instructions.

B. Furnish copies to all trades involved.

1.11 MATERIALS FURNISHED UNDER STANDARD SPECIFICATIONS: For various materials specified by reference to standard or reference type specifications, prepare and submit a list of such materials stating manufacturer's name and identifications to extent requested by the Contracting Officer.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION

3.01 SUBMITTALS AND TECHNICAL DATA:

A. Furnish submittals in four (4) copies. Unless otherwise specified. One (1) copy signed and dated by the Contracting Officer will be returned to the Contractor after approval or disapproval.

B. Materials incorporated into the work prior to approval from the Contracting Officer are at the Contractor’s risk. Contractor may be required to remove and replace them with approved materials at own expense.

C. Furnished in one (1) copy only data for operational test reports and commercial warranty and/or guarantee.

END OF SECTION

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL:

1.01 SECTION INCLUDES:

A. Workmanship

B. Manufacturers' Instructions and Certificates

C. Testing Laboratory Services.

1.02 WORKMANSHIP:

A. Comply with industry standards except when more restrictive tolerances are required or specified requirements indicate more rigid standards or more precise workmanship.

B. Perform work with persons qualified to produce workmanship of specified quality.

C. Where specific instruction in these Specifications require that a particular product and/or materials be installed and/or applied by “approved applicator” of the manufacturer, ensure that any subcontractors used for such work are approved applicators.

D. Secure products in place with positive anchorage devices designed and sized to withstand appropriate stresses, vibration, and racking.

1.03 MANUFACTURERS' INSTRUCTIONS AND CERTIFICATES:

A. When required by individual Specification sections, submit manufacturer's printed instructions, in accordance with Section 01300, for product data, assembly, installation, adjusting, and finishing.

B. Comply with instructions in full details including each step in sequence. Should instructions conflict with Contract Documents, request clarification from the Contracting Officer before proceeding.

C. When required by individual Specification sections, submit manufacturers' certificate, in duplicate, stating products meet specified requirements.

1.04 TESTING LABORATORY SERVICES:

A. Testing Laboratory selected by Contractor must be approved by the Contracting Officer (use AF Form 3000).

B. Authorized representative of the testing laboratory shall make the selection of samples.

C. Testing lab shall submit reports in duplicate directly to the Contracting Officer with a copy sent directly to the Contractor. Submit reports within 24 hours of the completion of the tests.

D. Contractor shall make Payments for testing, including associated transportation costs, if applicable. Include in the base bid the costs for required testing services.

E. If required, as a result of taking samples, the Contractor at his/her own expense shall do patching.

F. Contractor shall correct and re-test work that does not pass the specified requirements at the Contractor's expense until requirements are met.

G. Include a written report of results of all tests performed to include a statement that the test passed the requirements of the contract specifications.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Sanitary facilities

B. Barriers and barricades

C. Scaffolding and staging

D. Storage areas and fences

E. Removal

1.02 SANITARY FACILITIES: Provide proper sanitary and adequate toilet facilities for the use of all workers employed on the Project, located where directed, and enforce their use by all personnel on the Project. Enclose and weatherproof toilets and keep in a sanitary condition at all times.

1.03 BARRIERS AND BARRICADES:

A. Furnish, erect, maintain and remove all protective barriers, signs, temporary lighting, etc., required for protection of persons and property.

B. Provide barriers as-required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage.

1.04 SCAFFOLDING AND STAGING: Provide, install, and maintain all scaffolding, staging, trestles, and planking necessary for the work under each section in strict conformity with all applicable laws and ordinances, maintaining same so as not to interfere or obstruct the work of other trades.

1.05 STORAGE AREA AND FENCES:

A. The Contractor may request approval for an open-air, unsecured storage area on Base for storage of materials and equipment providing such a space is available. The size and location of the area shall be as directed by the Contracting Officer.

B. Security of the area is the contractor’s responsibility. Keep the storage area in a safe, neat, and orderly manner at all times.

C. Contractor is responsible for erecting and maintaining any security fence used for the storage area. Upon completion of the contract, remove the security fence from the Base.

1.06 REMOVAL:

A. Remove temporary materials, equipment, services, and construction prior to final payment.

B. Clean and repair damage caused by installation or use of temporary facilities and restore existing facilities used during construction to original or specified condition.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01570 - TRAFFIC REGULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Traffic control equipment.

B. Construction parking control.

C. Flag persons

D. Flares and Lights.

E. Haul Routes.

F. Traffic Signs and Signals

G. Removal

1.02 TRAFFIC CONTROL EQUIPMENT: Obtain approval for signs, signals, and devices including traffic control signals, cones, drums, flares, lights, and flag person equipment from C.O. prior to use.

1.03 CONSTRUCTION PARKING CONTROL:

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and the Government’s operations.

B. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.

C. Prevent parking on or adjacent to access roads or in non-designated areas.

1.04 FLAG PERSONS: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

1.05 FLARES AND LIGHTS: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

1.06 HAUL ROUTES:

A. Confine construction traffic to designated haul routes.

B. Provide traffic control at critical areas of haul routes to regulate traffic, and minimize interference with public traffic.

1.07 TRAFFIC SIGNS AND SIGNALS:

A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.

B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.

C. Relocate as Work progresses to maintain effective traffic control.

1.08 REMOVAL:

A. Remove all equipment and devices in their entirety when no longer required. Unless otherwise directed

B. Repair damage caused by installation.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Material and equipment of acceptable manufacture

B. Products

C. Transportation and handling

D. Storage and protection

E. Excess materials

1.02 MATERIAL AND EQUIPMENT OF ACCEPTABLE MANUFACTURE:

A. An item of material or equipment may be submitted for review as a substitute for an item specified by manufacturer and model number, type, provided that all of the following provisions are met:

1. The item is manufactured by an acceptable manufacturer that is judged by the Contracting Officer to be "or equal" to the item specified.

2. It must meet the requirements of service and maintenance features of the specified item of material or equipment including compatibility with the specific or related systems of the installation.

3. The item of material or equipment meets or exceeds minimum qualities and does not exceed dimensions (given or drawn to scale on the drawings) established by the specified item.

4. After review and approval, the item must be used consistently throughout the project so that all items of material or equipment used in place of specified items are of the same make and type.

5. The entire cost of all modifications and impacts resulting from the use of contractor substituted items, in place of specified items, shall be borne by the Contractor at no additional cost to the Government.

B. Submitting shop drawings showing variations from the contract requirements in accordance with FAR 52.236-21 and identify all the impacts resulting therefrom.

C. The Government will not be responsible for changes to the Contract, additional work or modifications to the design, nor interfacing difficulties as a result of substitutions by the Contractor.

1.03 PRODUCTS:

A. Products include material, equipment, and systems.

B. Products shall comply with specifications and referenced standards as minimum requirements.

C. Do not use products or materials prohibited by federal, state, or county statute or regulation.

D. Do not use materials and equipment removed from existing structure, except as specifically required by contract documents or approved by the Contracting Officer.

1.04 TRANSPORTATION AND HANDLING:

A. Transport products by methods that avoid product damage; deliver in undamaged, dry condition in manufacturer's unopened containers or packaging.

B. Provide equipment and personnel to handle products used in the performance of this contract by methods that prevent soiling or damage.

C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.05 STORAGE AND PROTECTION:

A. Store products for use in the performance of this contract in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.

B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

C. Store loose granular materials on solid surfaces in a well drained area; prevent mixing with foreign matter.

D. Arrange storage to provide coverings to protect products from damage from traffic and construction operations. Remove such coverings when no longer needed.

1.06 EXCESS MATERIALS:

A. All materials resulting from demolition are the property of the Contractor unless specified otherwise or as determined by the Contracting Officer.

1. Deposit materials determined to be Government property as directed by the Contracting Officer.

B. Contractor shall deliver all excess materials determined to be salvageable by the Contracting Officer to the Defense Reutilization and Marketing Office (DRMO).

1. The DRMO's operation hours 07:30 AM to 4:00 PM, Monday through Friday.

2. Follow all the DRMO turn-in procedures including, but not limited to, cleaning, bundling, and placing of the salvageable materials.

3. Notify the Government 48 hours prior to the requested turn-in date. Notification shall include, but not limited to, the number of items to be turned in and the quantity of each item.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Closeout Procedures

B. Final Cleaning

C. Warranties

1.02 CLOSEOUT PROCEDURES:

A. Submit written certification that the contract/delivery order documents have been reviewed, the work has been inspected, and that the work is complete in accordance with the contract documents/delivery order and ready for final inspection.

B. Provide the Contracting Officer with a requested date for final inspection, in writing, not less than 2 working days prior to the proposed date of final inspection. The Contracting Officer will coordinate with the members of the inspection party and establish the final inspection date. If construction deficiencies are identified, a request for re-inspection must be given upon correction of the deficiencies.

1.03 FINAL CLEANING:

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains, and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment. Clean roofs, gutters, downspouts, and drainage systems. Remove all roofing nails, scrap metal, etc. from grounds around facility

C. Clean site; sweep paved areas, rake clean other surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from the project and from the site.

1.04 WARRANTIES:

A. Provide all manufacturer's warranty documents required by individual sections.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 01800 - SPECIAL CONDITIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Work Schedule.

B. Utility Outages

1.02 WORK SCHEDULE:

A. Schedule the work between the hours of 7:15 AM and 4:00 PM on Monday through Friday, except Federal Holidays.

B. Permission to perform any work outside of these hours must be requested in writing and submitted no less than five (5) calendar days in advance for approval by the Contracting Officer. The Government may or may not grant such permission at its discretion.

1.03 UTILITY OUTAGES:

A. Submit requests for utility outages (gas, electricity, and water) in writing no less than ten (10) calendar days prior to the proposed outage.

B. Government reserves the right to reschedule the Contractor's proposed outage if deemed necessary.

C. In the event utility outages cannot be performed on any facility due to critical operation impact, perform utility outages and any related work on non-duty hours.

D. Notify the Base Fire Department prior to shutdown of emergency utilities to a facility.

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION: NOT USED.

END OF SECTION

SECTION 02080 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES requirements for removal and disposal of asbestos containing material encountered in the performance of this contract.

1.02 REFERENCES: In addition to the following, State, and Local Laws, codes and regulations also apply.

A. US GOVERNMENT CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emission Standards for Hazardous Air Pollutants, Subpart A General Provisions
40 CFR 241	Guidelines for the Land Disposal of Solid Wastes
40 CFR 257	Criteria for Classification of Solid Waste Disposal Facilities and Practices

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

Z9.2-79	Fundamentals Governing the Design and Operation of Local Exhaust Systems
Z88.2-80	Practices for Respiratory Protection

C. NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

Manual of Analytical Methods, 2nd Ed., Vol. 1, Physical and Chemical Analysis Methods (P&CAM): Method 239 Asbestos Fibers in Air Fibers ((N1, 3rd Ed., Vol. 1)

D. UNDERWRITERS LABORATORIES (UL):

386-85	Test Performance of High Efficiency, Particulate, Air Filter Units.

1.03 GENERAL REQUIREMENTS: Remove and dispose of asbestos containing material (ACM) present within and upon the structures, materials, and equipment to be altered, demolished, or repaired prior to demolition, alteration, or repair of the structures, materials and equipment involved.

A. Work Required: Remove asbestos containing materials from the structures, materials, and equipment to be demolished, altered or repaired, and all other site locations where directed or required. Asbestos materials to be removed will be identified in the asbestos Sampling Report" provided in the construction documents. This does not relieve the contractor from the responsibility of notifying the Contracting Officer or his representative of the discovery of suspected additional asbestos during the course of contract performance. The Construction Inspector is responsible for the verification of existence and extent of the additional work upon notification by the Contractor of the suspected additional ACM,. Should the suspected material prove not to be ACM, the Contracting Officer shall notify the Contractor.

B. Debris: Consider all debris located within the project limits for asbestos removal and disposal work as containing, or having been contaminated with asbestos. Treat, handle, remove, and dispose of in accordance with applicable regulations. Dispose of any miscellaneous debris located outside of the requested work area determined to contain asbestos in accordance with the applicable regulations.

C. Structures, Materials, and Equipment Surfaces: Consider interior building surfaces, including supporting structure surfaces or equipment as contaminated with asbestos containing dust. Clean surfaces in accordance with the regulations prior to demolition, alteration or repair of the structures, materials and equipment.

1.04 CONTRACTOR COMPLIANCE AND RESPONSIBILITY:

A. Compliance: Perform asbestos removal and disposal operations in compliance with all federal, state, and local laws, regulations, standards, codes, and these specifications governing asbestos removal and disposal. Any other work required in conjunction with such removal and disposal shall also comply with all federal, state, and local laws, regulations, codes, and these specifications. In the event of a conflict between the requirements of the regulations and the requirements contained in these specifications, the more stringent requirements govern.

B. Responsibility: It is the responsibility of the Contractor to visit and investigate the site, review all applicable drawings and specifications, available Asbestos Sampling Reports and to assess the actual amount of asbestos present.

1. The Contractor is responsible for supplying all labor, material, equipment, services, insurance's, dumping fees, monitoring and inspection costs, and all incidentals which are necessary or required to perform the work in accordance with the applicable regulations and these specifications.

2. Have a NIOSH (EPA) Certified Hygienist or his representative at the job site throughout all phases of the work, for taking 'air samples required for asbestos abatement procedures.

3. Provide 366 CES/CEV with a copy of the Asbestos 10 day notices on the day of the submittal to EPA/IDEQ.

1.05 GOVERNMENT RESPONSIBILITY:

A. Asbestos Sampling Report: When available, the Contracting Officer shall provide the Contractor with an Asbestos Sampling Report based on samples taken and analyzed at a testing laboratory. This report shall constitute a representation of what is believed to be a complete identification of the asbestos containing material associated with a facility or site, and be definitive to the degree that the Contractor may use the report to determine initial project requirements. While the report should identify all known asbestos at the facility or site, it is not a certification of total scope identification. The Contractor shall remain responsible for notification to the Contracting Officer of any additional suspected asbestos containing materials discovered during the execution of the Contract.

B. Monitoring: The Government may employ a Certified Industrial Hygienist (independent of that required to be employed by the Contractor) to monitor air quality, project procedures, and to help ensure the Contractor is in compliance with applicable federal, state, and local regulations.

1.06 CONTRACTOR QUALIFICATIONS AND CERTIFICATION: Unless otherwise stated and in writing, at least ten (10) calendar days prior to the start of any asbestos removal work, provide the following submittals to the Contracting Officer or his representative:

A. Certifications: That the principals of the firm actually performing the work and all employees involved in asbestos removal and disposal operations are familiar with the following:

1. The U.S. Environmental Protection Agency's Regulations for Asbestos, 40 CFR 61, Subpart M.

2. The U.S. Department of Labor OSHA Asbestos Regulations, 29 CFR 1926.

3. State and local regulations pertaining to asbestos removal, abatement, hauling and disposal.

4. Certify that all employees who are involved in asbestos work have received the information and training required by 29 CFR 1926.58(k) (3) and that the Contractor has complied with all other state and local requirements.

B. Licenses: Submit evidence that the Contractor is licensed to perform asbestos removal projects in the jurisdiction in which the project is located.

C. Notifications: Prior to starting any asbestos removal work, attend a pre-construction meeting. The Contracting Officer shall designate the time and place of the meeting. At that meeting provide detailed written account(s) of the following:

1. Proposed work schedule for all operations involving asbestos.

2. Provide overview of site preparation plans and the proposed project containment strategy. Submit a complete, approved, detailed asbestos removal plan at least ten (10) calendar days prior to the start of the asbestos removal work.

3. Submit for approval by the Contracting Officer the name, address, and telephone number of the laboratories that will perform the test analysis throughout the project. The laboratories shall have participated in at least six (6) rounds of the EPA asbestos bulk sample quality assurance program and currently be proficient in the AIHA Administrative PAT program for air samples.

4. Provide the name of the NIOSH Certified Hygienist to be assigned to the project by the Contractor. The Hygienist shall meet the qualification requirements of a Competent Person" as stated in 29 CFR 1926.58(b).

D. Asbestos Inventory: Prior to any work at the site, conduct a space-by-space inspection with the Contracting Officer or his representative and prepare a written inventory of all existing areas where asbestos has been identified as being present (using the installation supplied asbestos sampling report as a basis). This document will be signed and certified as to apparent accuracy by both parties. Treat all areas and materials previously described as containing asbestos as such unless the Contractor provides analytical evidence satisfactory to the Contracting Officer that specific portions of the material are not asbestos or asbestos contaminated.

E Asbestos Removal Plan: At least ten (10) days prior to the start of asbestos removal work, submit for approval a complete detailed asbestos removal plan in accordance with Paragraph 6.3(b) above. The plan shall contain the following elements:

1. Project Containment Strategy: Prepare, sign and seal the plan, including certification number and date by the Contractor's CIH. Include a sketch and shop drawings showing the location and details including layout of the decontamination area as described further in paragraph DECONTAMINATION ENCLOSURE SYSTEMS; location of local exhaust; equipment and methods; and materials to be used to prevent asbestos fiber contamination of the work site and environment. The plan will address all phases of the work including, but not limited to:

   a. Preparation of the work area

   b. Storage of materials and equipment at the site

   c. Temporary utilities

   d. Engineered controls and work practices used to achieve compliance with exposure levels, such as negative air systems, containment barriers, use of removal encapsulants, wet methods, or other methods or combination of methods allowable under 29 CFR 1926.58(g). DRY REMOVAL METHODS, WILL NOT BE ALLOWED UNDER ANY CIRCUMSTANCES.

   e. Order of removal.

   f. Decontamination procedures to be used for personnel, work area, and equipment.

   g. Waste disposal.

   h. Air monitoring procedures.

   i. Final decontamination and cleanup

   j. Procedures for dealing with heat stress.

   k. Emergency procedures

   l. Notification and all permits that are required.

   m. Prior to starting work, the Contractor, the Contractor's CIH, the Construction Inspector, and the Contracting Officer shall meet to discuss plan details, work, procedures, and safety precautions.

2. Work Schedule: This schedule will include all operations involving asbestos.

3. Equipment List: Shall include the brand name, model, capacity, performance characteristics (as applicable), quantities, and any other pertinent information required for all equipment and materials to be used in all asbestos removal operations performed on this project. The list shall include but not be limited to the following items:

   a. Respirators and cartridges

   b. Vacuums and vacuum equipment

   c. Protective clothing and other personnel protection equipment

   d. Trucks used to haul waste.

   e. Containment and disposal of waste materials

   f. Air sampling pumps.

   g. Wetting agents.

   h. Pressure differential air monitoring devices.

   i. Submit manufacturers' certificates showing approval by NIOSH of all respiratory protection devices and equipment utilized on the site. Provide certificates of HEPA filtration capabilities for all cartridges and filters.

F. Asbestos Safety Plan: Submit for approval a detailed safety plan for all phases of the asbestos abatement operation at least ten (10) days prior to the start of removal operations. This plan shall include an "Accident Prevention Plan" and shall include but not be limited to the following:

1. General Safety Procedures

2. Respirator Program: This program shall be in accordance with 29 CFR 1926.58(h) and 19 CFR 1910.124(b), (d), (e), and (f) and state and local regulations.

3. Medical Surveillance Program: The program shall be in accordance with 29 CFR 1926.58(n), and 1910.20.

4. Emergency Procedures: Write emergency procedures and prominently post in the clean change area and equipment room of the personnel decontamination area. All persons entering the work area shall read and sign the procedures to acknowledge receipt and understanding of the work site layout, location of emergency exits and emergency procedures.

G. Asbestos Waste Disposal Plan: This plan will include, but not be limited to the following:

1. Name, location, and telephone number of the landfill used. A copy of the landfill's issued license and a signed agreement that the landfill will accept the asbestos waste shall be provided to the Construction Officer or his representative.

2. Include the name, location, and telephone number of any waste subcontractors used and the subcontractor's landfill. Provide the copies of licenses and signed agreements as in Paragraph 5.7(A) above.

3. Should rented equipment be used in removal areas or to transport asbestos waste materials, include a copy of the written notification-provided to the rental company informing them how their equipment will be used along with the rental company's acknowledgment and agreement.

H Notifications and Permits: It shall be the Contractor's responsibility to secure all permits required and pay any necessary fees to carry out this asbestos removal project.

1. Permits: Submit copies of the following:

a. All permits required by federal, state, local and Air Force agencies for the type of asbestos removal undertaken.

b. All permits required by the federal, state, local and Air Force authorities for asbestos waste hauling and dumping.

2. Notifications: In accordance with 40 CFR 61.146, at least ten (10) days prior to the commencement of demolition work, provide written notices, with copies, of intent to demolish friable asbestos materials to:

a. National Emissions Standard for Air Pollution (NESHAPS) Coordinator at the governing EPA Regional Office

b. The State asbestos regulatory office

c. Local regulatory office

d. Base regulatory office.

e. Others, as required.

1.07 PUBLIC WARNINGS AND POSTED SAFETY INFORMATION: In addition to the warning signs required by 29 CFR 1926.58(k), post the following at the work site:

A. "DANGER--ASBESTOS HAZARD, AUTHORIZED PERSONNEL ONLY" signs will be posted at all entrances to each building or area in which work will take place. Additional public notices required by federal, state and/or local governments will also be posted on the structures and at work areas as necessary.

B. U.S. Department of Labor - OSHA Poster Number 3038 will be hung in a place where it will be clearly visible to personnel each day.

C. A copy of the U.S. Environmental Protection Agency Regulations for Asbestos, 40 CFR 61, Subpart M, and a copy of U.S. Department of Labor--OSHA Asbestos Regulations, 29 CFR 1926.58.

D. A list of all scheduled air sampling tests to be completed each day. This list will include the type of sample to be taken and the total amount of air that is taken through the filter cassette.

E. A list of telephone numbers for the local hospital, the security police, the fire department, a representative of the Construction Inspector, Contracting Officer who can be reached 24 hours a day, the Contractor's corporate headquarters, and any further professional consultants directly involved in the project.

1.08 PERSONNEL PROTECTION: To protect all personnel, authorized visitors, and others in or around the asbestos removal site during the course of this project, comply with all of the requirements of 29 CFR 1926.58 and the following requirements:

A. Certified Industrial Hygienist (CIH): The Contractor's Certified Industrial Hygienist (CIH) or his representative shall be present on the Job site throughout all phases of the removal project to supervise, monitor, and document all aspects of the project's health and safety provisions. The Contractor's CIH shall maintain a daily log showing the results of all air sampling tests done throughout each phase of the project. The CIH shall stop work inside the work area or asbestos control area if measured airborne fiber levels exceed the "action" level of 0.1 fibers per cubic centimeter (FCC) outside the work area as defined by 29 CFR 1926.58(b). The CIH shall be responsible for maintaining the records required by the medical surveillance program; and collect all samples for the air monitoring program.

B. Medical Surveillance: Medical surveillance will be implemented in accordance with the Contractor's submitted plan and, as a minimum shall comply with the requirements of 29 CFR 1926.58(m) and (n).

C. Respirators: Provide appropriate respirators as required for use in accordance with the Contractor's submitted plan and as a minimum shall conform to 29 CFR 1926.58. Fit testing shall be in accordance with 29 CFR 1926.58(h) (4) and Appendix C referenced therein.

D. Protective Equipment: Provide an adequate supply of respirators and protective clothing to all employees, authorized visitors, and personnel at the site in accordance with 29 CFR 1926.58(i).

PART 2 - PRODUCTS: NOT USED.

PART 3 - EXECUTION

3.01 MATERIALS AND EQUIPMENT: Provide sufficient quantities on site of all the materials and equipment needed to complete the project in the proper manner, in accordance with 29 CFR 1926-58(g) and Appendices F and G to Z9 CFR 1926.58. prior to the start of the asbestos removal and disposal work

3.02 AIR MONITORING AND ANALYSIS: Accomplish monitoring of airborne concentrations of asbestos fiber in accordance with 29 CFR 1S26.58. The Contracting Officer shall retain the option to perform independent monitoring. Monitor the area One (1) day prior to beginning on-site demolition or construction work to establish the background concentrations for each work area. Take at least three general area air samples in each asbestos removal work area.

A. Sampling Equipment: Use the following sample collection equipment:

1. High volume, battery powered, body-attachable, portable personnel pumps with calibrated flow rate of at least 2 liters per minute. Calibrate the air flow while the pump is attached to the sampling train.

2. Low volume, battery powered, body-attachable, portable personnel pumps with calibrated flow rate of at least 2 liters per minute and a self-contained power pack capable of sustaining this calibrated flow for at least two hours. This pump shall also be equipped with an automatic flow control unit which will maintain a 2-liter per minute flow even as filter resistance increases due to trapped debris.

3. Standard filter cassettes will be utilized in accordance with 29 CFR 1926.58 Appendices A and B.

4. A portable flow calibrator capable of calibration to within +2 percent over a temperature range to 50 liters per minute.

B. Type of Air Sampling: Collect three types of air samples.

1. Area Samples: Collect these at a single, specific spot or station. Pass a minimum of 2,000 liters of air through the filter for each station sample outside the work area. Determine minimum collection amounts inside the work area by filter loading conditions and consultation between the Contractor and the Government.

2. Personnel Samples: Collect these with a 2-liter per minute pump and a filter cassette. Attach the cassette to the pump with a length of plastic tubing. Pin, clamp or otherwise securely attached the cassette to the forward part of the shoulder of the worker in an acceptable manner. Position the cassettes exposed filter surface so that it points downward. The pump shall remain attached to the body of the worker and shall run for ten minutes to two hours, adjusted for filter load and working conditions to produce a filter fiber density of 100 to 1,300 fibers per square millimeter in accordance with 20 CFR 1926.58, Appendix B.

3. Dust Samples: Collect with a 2-liter per minute portable pump equipped with a filter cassette and an extra length of tube extending from the filter end of the cassette. Use this tube from the forward end of the cassette in a manner similar to a small vacuum cleaner hose. Place the hose on at least ten (10) spots of visible dust or in areas such as room corners, locker tops, and similar locations where asbestos containing dust is most likely to accumulate. Analyze filters from cassettes used for collecting dust samples as bulk samples rather than air samples.

C. Sampling Procedures: Utilize a CIH or a person working under the direct supervision of a CIH to collect all samples. Sampling shall be done in accordance with 29 CFR 1926.58, Appendices A and B.

1. Final Air and Dust Samples: Use Transmission Electron Microscopy (TEM) methods on the final air and dust samples to determined if asbestos contamination has been reduced to the 0.01 FCC or adjoining environmental concentration, whichever is less.

D. Sample Record Maintenance: Keep comprehensive records concerning the testing, monitoring, and analysis of air conditions in and around the work area throughout every phase of asbestos removal work.

1. Pumps: Keep records on all air pumps used on this project. "Air pumps" will include high volume pumps and low volume personnel pumps. The records shall show:

   a. The manufacturer, model type, and serial number of each item.

   b. The date on which the pump was flow calibrated.

   c. The manufacturer, model type, and serial number of the flow calibrator used to calibrate the pump.

   d. The rate of flow registered by the calibrating instrument for the pump.

   e. The name of the person who performed the calibration

2. Dust Sample Collection: A hand drawn map marked with "X"s to show the collection points for dust samples shall accompany each dust sample filter cassette. Each "X" shall also have a briefly written description to further describe the collection point; example: "top of pipes".

E. Laboratory Analysis: Employ the following analytical methods where required.

1. TEM: The TEM laboratory shall provide written reports on all samples that it processes using TEM analysis.

3.03 DECONTAMINATION ENCLOSURE SYSTEMS: Where required by the type of removal procedures utilized, build suitable framing for the decontamination enclosures. Submit shop drawings for approval to the Contracting Officer or designated representative. Submit shop drawings as part of the "Asbestos Removal Plan" required by Paragraph 5.5 above, and in accordance with any Contract Clause(s). Submit adequate descriptions of any portable pre-fab units, if utilized, for review and approval by the Contracting Officer or designated representative prior to construction. Submittals shall include, but not be limited to, a floor plan layout showing dimensions, materials, sizes, thickness, plumbing, and electrical rooms or other areas; all entries into areas shall be through an airlock. In all cases, access between any two rooms within the decontamination enclosure systems shall be through a curtained doorway. Perform maintenance of the enclosure system in accordance with the approved Asbestos Removal Plan.

3.04 DECONTAMINATION PROCEDURES

A. Personnel Decontamination Procedures: Ensure that the personnel decontamination procedures are done in accordance with all federal, state, and local laws and regulations.

B. Equipment Decontamination Procedures: Thoroughly decontaminate all tools, furnishings, apparatus, fixtures, pieces of equipment, containers of supplies, exterior surfaces of bags or containers containing ACM, and any other item moved out of the sealed work area or glove-bag.

1. HEPA vacuum, damp wipe, shower thoroughly, wrap and seal items removed from the sealed work area, in multiple layers of polyethylene sheeting. Wrap and seal electrical items which can be damaged by water in at least two layers of 6-mil polyethylene sheeting before they are passed into the holding area.

2. Remove all the tools from the site in 6-mil plastic bags or sealed wraps or appropriate containers. Bag working ends of brooms, long scrapers, shovels, and similar implements. Secure each bag to the handle with tape. Completely bag and seal tubs of scrapers, wire brushes, and similar implements prior to their removal from the work Area. Bag and seal coils of hose and electrical wire prior to removal from the work area. Wrap scaffolding and ladders in polyethylene. The Contractor shall be responsible for ultimate disposition of contaminated tools and ensure they will be either disposed of or cleaned so as to meet federal, state, and local regulations.

3.05 ASBESTOS REMOVAL PROCEDURE OPTIONS: Determine the most efficient manner in which to carry out the asbestos removal from the work areas in conformance with this specification. Select from options available and in conformance with 29 CFR 1926.58. Detail the selected options or combination of options selected to comply with the regulations in the Contractor's Asbestos Removal Plan include details of construction, materials used, equipment required, work practices to be used, etc. Use wet engineering control methods or use of removal encapsulants to comply with the regulations in conjunction with the selected removal procedures.

A. Methods: Use the following methods for asbestos removal as applicable in accordance with 29 CFR 1926.58:

1. Removal intact using polyethylene sheeting, glove bags, or liquid encapsulating agents approved by the Contracting Officer.

2. Use a containment barrier with a negative air system when asbestos insulation or material is stripped, cut, or otherwise removed from piping, duct, walls, or other surfaces and areas of building interiors without the use of methods stated in Paragraph 12.1.1 above.

3. In areas where established, if a containment barrier is not practical, use removal methods, engineered controls, and work practices that will prevent visible emissions and will prevent exceeding asbestos exposure levels in accordance with 29 CFR 1926.58 and 40 CFR 61. Where an enclosure or containment barrier is not provided, provide a roped off perimeter around the work area where asbestos removal procedures are being performed. Appropriately mark perimeters with warning signs and/or ribbons in accordance with Paragraph 7.0 "PUBLIC WARNINGS AND POSTED SAFETY INFORMATION". Maintain all other requirements for asbestos control areas. The perimeter of the work or a greater distance is determined by the Contractor's Certified Industrial Hygienist in order to maintain acceptable asbestos levels in adjacent areas. The Contracting Officer may require that the perimeter distance be expanded to more than twenty (20) feet should air monitoring results show such expansion is warranted. Conduct personnel and area monitoring of airborne filters during the work shift at the downwind limits of the asbestos work area, at a frequency recommended by the Contractor's CIH, but at intervals no greater than four (4) hours. Should the lesser concentration value (either the action level or twice the background level) of airborne asbestos fibers monitored at the designated limit be exceeded, evacuate personnel in adjacent areas. If after checking, adjacent areas are found to be contaminated, clean and inspect the for asbestos dust or residue and the fiber concentration of the air in the area checked. Concentration shall be less than 0.01 FCC of air or not greater than the referenced background, whichever is less. Provide personnel decontamination facilities as appropriate for removal of contaminated clothing, decontamination of personnel equipment, showering, and donning of clean clothing.

B. Encapsulation:

1. Store, handle and prepare Liquid Removal Encapsulants in accordance with the manufacturer's recommendation. Liquid encapsulants shall be penetrating type encapsulant. Apply to asbestos-bearing surfaces with airless spray equipment.

2. Polyethylene Sheeting used for wrapping asbestos-contaminated items prior to disposal shall be 6-mil in thickness. Wrap the asbestos-contaminated items in two separate layers of polyethylene sheeting with the seams and other opening of each layer completely and effectively sealed with duct tape.

C. Glove Bag Technique: Accomplish removal of asbestos using glove bags using methods and techniques in accordance with 29 CFR 1926.58, Appendix G. Glove bags shall be constructed of 6-mil polyethylene plastic with dual inward projecting long sleeves, rubber gloves, on inward projecting water wand sleeve, and internal tool pouch, and attached, labeled receptacle for asbestos waste. The glove bag shall be constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers during the removal process.

D. Containment Barrier and Negative Air System: In situations where intact removal or glove bag techniques are not applicable for removing asbestos from buildings, erect a containment barrier around the work area and equip the work area with a negative air system. Do not remove or strip any asbestos insulation unless this activity is done in a negative air area.

1. The containment barrier shall consist of temporary partitions made from lumber and covered on both sides with 4-mil polyethylene, and/or 6-mil polyethylene attached to existing walls. Seal airtight all vents, ducts, grilles, and other openings capable of passing air. Seal an opening in the ceiling, walls or floors which constitute the containment barrier for the work.

2. The negative air system units shall each meet the following minimum requirements:

   a. Deliver its rated volume of air with a clean first stage filter, an intermediate filter, and a primary HEPA filter in place.

   b. The HEPA filter must be certified, capable of removing particles of 0.3 microns at a minimum efficiency of 99.7 percent.

   c. Under typical asbestos removal conditions, it must continue to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 2.5 inches of static pressure differential on La magnehelic gauge.

   d. Must have a magnehelic gauge to monitor and display readouts of the unit's air pressure difference across the filters.

   e. Must provide a means for the operator to easily interpret the magnehelic gauge readings in terms of cubic feet or air per minute moving through the machine at any given moment.

   f. Must have an electronic mechanism which automatically shuts the machine off in the event of a filter breach or absence of a filter.

g. Must have an audible horn that sounds an alarm when the machine has shut itself off.

h. Must have an automatic safety mechanism that prevents a workman from improperly inserting the main HEPA filter.

i. Must be ducted through the containment barrier walls to the outside of the work area. When possible, the duct will exhaust into the outside air; otherwise, it will exhaust into the area of the building beyond the containment barrier where no person inappropriately protected shall be admitted. The Unit shall never exhaust into the work area.

3. Provide enough negative air system units to change all the air within the containment barrier at least once every 15 minutes. To compute the minimum number of units required, divide the total cubic footage of the work space by the documented air moving capacity of the filter units. The air moving capacity of any particular kind of HEPA filtration unit shall be measured in cubic feet of air per minute (CFM). The machine's air moving capacity will be that number of CFM it can move when working under a filter load equivalent to 2 inches of static pressure. Compute the total cubic footage of all air space inside the containment barrier. This computation will be recorded and available to the Contracting Officer upon request.

4. Place asbestos waste in approved containers, and apply caution labels on the containers. Clean external surfaces of the filled containers thoroughly by wet sponging in the designated area. Move the containers to the washroom thoroughly wet-cleaned, and then move to the holding area pending removal. Uncontaminated personnel shall not enter the washroom or work area; contaminated personnel shall not exit thorough the equipment decontamination enclosure system.

E. Asbestos Removal:

1. All asbestos removal will be in accordance with the Contractor's approved Asbestos Removal Plan. Prior to commencing intact removal procedures, glove bag procedures, construction of a containment barrier and negative air system, or establishment of a perimeter barrier system around a work area, personnel wearing the appropriate protective clothing and respirator as determined by the pre-work air tests, shall enter the work area and begin wetting all asbestos bearing surfaces. Collect, contain, clean and dispose of all unattached debris in the required manner for asbestos-contaminated materials.

2. Initiate, upon completion of the initial debris cleanup, intact removal, glove bag, containment barrier and/or perimeter barrier, procedures.

3. Unless asbestos-bearing surfaces are encapsulated prior to removal or removed by other means, wet with amended water at such intervals as to prevent the asbestos-bearing surface from drying out. At the start of each work day, begin with a thorough wetting of the work area. When wetting is conducted inside a containment barrier and negative air system, begin wetting at points most distant from the negative air system unit intake openings. The spray equipment used to apply the amended water shall be capable of producing a "mist" application to the asbestos-bearing surface to reduce the release of fiber. Saturate the asbestos-bearing material sufficiently to wet the substrate without causing excess dripping.

4. In order to maintain asbestos concentrations at a minimum, the saturated, encapsulated, or otherwise enclosed asbestos must be removed in manageable sections. Do not drop asbestos-bearing waste from a height in excess of 10 feet. For heights up to 35 feet, provide chutes or scaffolding to intercept the drop.

5. Seal containers (bags or drums) when full. Double bag wet material (due to its weight) if single bagging is not adequate. Do not overfill bags. They should be securely sealed to prevent accidental opening and leakage by tying the tops of bags with wire or cord. Place bags in drums for staging and transportation to the approved sanitary landfill. Decontaminate bags on exterior surfaces by wet cleaning and HEPA vacuuming before placing in clean drums and sealing with locking ring tops.

6. Large components removed intact may be wrapped in two (2) layers of 6-mil polyethylene sheeting secured with tape for transport to the landfill.

7. Asbestos containing waste with sharp-edged components such as nails, screws, metal lath, or tin sheeting will tear the polyethylene bags and sheeting, place into drums for disposal.

8. After completion of all asbestos stripping and removal work, wet-brush, wipe or sponge clean surfaces from which asbestos containing materials have been removed.

9. After the gross amounts of asbestos have been removed from every surface and/or encapsulated materials have been removed, collect all remaining visible accumulations of asbestos remaining on floors using shovels, dustpans, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the containment barrier.

10. When all coverings have been removed, use HEPA vacuum cleaners to vacuum every surface. Pay particular attention to those surfaces or locations that could harbor accumulations of residual asbestos dust.

3.06 FINAL CLEANUP: Begin final clean up when all visible asbestos has been removed from the work area. All outer perimeter seals shall remain in place during final cleanup. Protective clothing and respirators shall remain in use. Continue to follow all normal decontamination procedures. Containment barriers and negative air systems established inside of buildings shall remain in full operation.

A. Use buckets of water to which a grease-cutting detergent has been added for washing the exposed surfaces.

B. Wet Paper Wiping Cloths in the buckets and then wipe across all spaces of the work area. Do not rinse the wiping cloths. Instead, when dirty, discard in a debris bag kept available for this purpose.

C. Continue wiping down until the final TEM analysis of air samples documents that the area is cleaned and the Construction Inspector establishes that the project is acceptable. The area shall be considered clean when the asbestos level does not exceed 0.01 FCC.

D. Where perimeter barrier methods are used for cleanup of vacant concrete slabs, carry out Final Cleanup procedures in accordance with the Contractor's Asbestos Removal Plan. Asbestos levels after Final Cleanup is completed shall not exceed 0.01 FCC, or the adjacent environmental concentration, whichever is less, to be acceptable.

3.07 DISPOSAL: Dispose of all materials contaminated with asbestos in accordance with the Contractor's Asbestos Removal Plan (Reference Paragraph 3.05 E above).

3.08 PROJECT DOCUMENTATION: Maintain and have available for inspection at the job site, the following:

A. A Daily Narrative Log kept by the Contractor's CIH or his designee. The log shall document the major events which occur each day. This log shall provide a comprehensive description of conditions in and around the job site. It shall include the names of all persons who visit the job site and all persons who enter the sealed or restricted work areas. It shall contain the details of all accidents, emergencies, breakdowns of equipment, and any material, procedural or safety difficulties. It shall contain details such as the number of persons on the job, the time they entered the work area and the time they left, and the nature of the work-in-progress. Each day's entries shall be signed and dated by the person that made them.

B. A daily Air Monitoring Log which records all required items outlined in Paragraph 10.0 "AIR MONITORING AND ANALYSIS", subparagraph 10.4, "Sample Record Maintenance".

C. Work Schedules and Progress Charts amended on a daily basis.

D. Upon Completion of the Work at each structure, slab or work area, prepare a report and submit it to the Contracting Officer. The report shall contain:

1. A summary of all work that was done

2. A brief description of how the work was accomplished.

3. A description of any problem areas encountered during the work.

4. A copy of the narrative log maintained at the job site throughout the work.

5. A copy of the air monitoring log maintained at the job site throughout the work.

3.09 CONSTRUCTION QUALITY CONTROL: Attention is directed to SECTION: 01400, Quality Control which requires the Contractor to perform quality control inspection, testing, and reporting. Establish and maintain a quality control system for all operations under this Section to assure compliance with contract requirements and pertinent Federal, State, and local laws, rules and regulations as cited throughout the text of this Section.

A. Maintain records of quality control for all operations performed, including, but not limited to, the following:

1. Qualifications of Contractor and Personnel

2. Required Notifications and Permits.

3. Public Warnings and Safety Information

4. Containment Barriers, Coverings, and Airlocks

5. Personnel Protection

6. Decontamination Procedures

7. Collecting and Testing of Samples.

8. Project Documentation.

9. Asbestos Removal Procedures

10. Final Cleanup

11. Completion of Work Reports

12. Special Conditions.

13. Disposal Site.

14. Observance of Safety Regulations

B. Records: Furnish copies of all records of inspection, testing, monitoring, or related items, as well as records of any corrective actions taken, to the Contracting Officer in accordance with federal, state, and local regulations, and as otherwise directed.

3.10 FIELD-CONTROL TESTS: Make preparation and testing of samples at no additional cost to the Government. Take samples, make test specimens, and test under the supervision of the Construction Inspector. Submit test results to the Contracting Officer within seven days.

END OF SECTION

SECTION 02110 - DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.01 SECTION INCLUDES: Principal work in this section includes, but is not limited to the following:

A. Protection of existing work to remain.

B. Removal and relocation of item(s) indicated.

C. Removal, storage, protection and installation of items to be reused

D. Removal of existing construction as necessary to provide for new construction.

E. Debris removal

F. Protection required to prevent dust entering existing areas and HVAC during demolition.

G. Hazardous Waste (Lead)

1.02 GENERAL PROVISIONS:

A. Field Conditions: Take into consideration all obvious existing conditions on the site. Accept the site of the work as it exists and clear obstructions to the work shown.

B. Examine the site and all conditions and limitations thereon and thereabouts. Take into accounts all existing conditions and limitations whether or not the same are specifically shown or mentioned in any of the Contract Documents. Include whatever is needed to complete the work in every part as shown, described or reasonably required or implied to attain the completed condition intended by the contract.

C. Include the reworking or abutting surfaces to make new work join and match existing surfaces to remain.

D. Protection of Personnel: Erect signs, barricades and such other forms of warning as may be required to prevent personnel from putting themselves in the way of injury.

E. Existing Work to Remain: Provide such forms of protection as may be necessary to prevent damage to existing work and equipment to remain.

F. Dust Control: Provide temporary dust filters on existing return air grilles.

G. Items to be relocated: Exercise the greatest possible care when items are scheduled for relocation. Use only skilled labor in the appropriate crafts. Identify items to be relocated, store and protect as directed by Contracting Officer. See drawings for items to be relocated.

H. Flashing material may contain lead. If flashing is identified as containing lead, remove and dispose as hazardous waste.

PART 2 - PRODUCTS

2.01 MATERIALS: Provide tools and equipment, as necessary for proper completion of this work.

PART 3 - EXECUTION

3.01 GENERAL DEMOLITION AND REMOVAL:

A. Carefully remove items of existing work indicated to remain upon completion of the contract, but which require removal to complete the work and replace upon completion. The replaced work shall match its condition at the start of the work.

3.02 PATCHING:

A. Unless otherwise shown, patch and finish surfaces as necessary to match existing, and in accordance with the requirements of the various specification sections.

3.03 REMOVED MATERIAL AND DEBRIS:

A. Do not allow materials and debris generated by demolition activities to accumulate. Remove and transport debris in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal apply.

B. Leave all spaces broom clean with all ledges and corners properly cleaned.

3.04 PROTECTIVE MEASURES:

A. Protection of Existing Construction: Protect existing construction noted to remain. Restore or repair any existing construction noted to be saved, that becomes damaged, to original condition or better.

END OF SECTION

SECTION 07311 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Documents and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes asphalt shingles for sloped roofs.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.

C. Samples for initial selection purposes in form of manufacturer's sample finishes showing full range of colors and profiles available.

D. Samples for verification purposes in form of two full-size units of each type of shingles required.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intact.

B. Handle and store materials at Project site to prevent water damage, staining, or other physical damage. Store roll goods on end. Comply with manufacturer's recommendations for job site storage, handling, and protection.

1.5 PROJECT CONDITIONS

A. Weather Conditions: Proceed with Work only when existing and forecasted weather conditions will permit Work to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

1.6 EXTRA MATERIALS

A. Deliver extra materials to Government. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.

1. Furnish quantity of full-size asphalt shingles equal to 2 percent of amount installed.

1.7 WARRANTY

A. Special Project Warranty: Submit a written warranty, executed by manufacturer, agreeing to repair or replace asphalt shingles that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, deformation or deterioration of shingles beyond normal weathering. This warranty shall be in addition to, and not a limitation of, other rights the Government may have against the Contractor under the Contract Documents.

1. Warranty period is 20 years after date of Final Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering asphalt shingles that may be incorporated in the Work include, but are not limited to, the following:

1. Celotex Corporation.
2. CertainTeed Corporation.
3. GAF Building Materials Corporation.
4. Georgia Pacific.
5. Manville Roofing Systems Division.
6. Owens Corning Fiberglas Corporation.

2.2 ASPHALT SHINGLES

A. Square-Tab Strip Shingles, UL Class "A," Standard Weight: Mineral-surfaced, self-sealing, three-tab asphalt fiberglass strip shingles complying with ASTM D 3018, bearing UL Class "A" external fire exposure label and UL "Wind Resistant" label.

B. Hip and Ridge Shingles: Job-fabricated units cut from actual shingles used.

C. Colors, Blends and Patterns: Where manufacturer's standard products are indicated, provide asphalt shingles as selected by government.

2.3 ACCESSORIES

A. Felt Underlayment: No. 15; unperforated organic felt complying with ASTM D 226, Type I; 36 inches wide.

B. Asphalt Plastic Cement: Nonasbestos fibrated asphalt cement complying with ASTM D 4586, designed for trowel application.

C. Nails: Aluminum or hot-dip galvanized steel, 11- or 12-gage, sharp-pointed, conventional roofing nails with barbed shanks, minimum 3/8-inch-diameter head, and of sufficient length to penetrate 3/4 inch into solid decking or to penetrate through plywood sheathing. Material of nails in contact with flashing shall match materials selected for flashing to prevent galvanic action.

D. Staples: Minimum 16-gage, zinc-coated steel roofing staples with minimum crown width of 15/16 inch, and of sufficient length to penetrate 3/4 inch into deck lumber or through plywood deck. Pneumatically apply staples without damaging shingle.

E. Metal Drip Edge: Minimum 0.024-inch mill finish aluminum sheet, brake-formed to provide 3-inch roof deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge. Furnish in lengths of 8 or 10 feet.

F. Metal Flashing: 0.024-inch mill finish sheet aluminum, job-cut to sizes and configurations required.

1. Valley flashing shall be preformed with inverted v profile at center of valley.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate for compliance with applicable reference standards, installation tolerances, and other conditions affecting performance of work. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with noncorrosive roofing nails.

B. Coordinate installation with flashings and other adjoining work to ensure proper sequencing. Do not install roofing materials until all vent stacks and other penetrations through roof sheathing have been installed and are securely fastened against movement.

3.3 INSTALLATION

A. Comply with manufacturer's installation instructions and recommendations, but not less than recommended by "The NRCA Steep Roofing Manual."

B. Felt Underlayment: Apply one layer of 15# felt underlayment horizontally over entire surface to receive asphalt shingles, lapping succeeding courses a minimum of 2 inches, end laps a minimum of 4 inches, and hips and valleys a minimum of 6 inches. Fasten felt with sufficient number of roofing nails or noncorrosive staples to hold underlayment in place until asphalt shingle application.

C. Install asphalt shingles beginning at lower end with a starter strip of roll roofing or inverted shingles with tabs removed. Fasten shingles in pattern, with weather exposure, and using number of fasteners per shingle as recommended by manufacturer. Use vertical and horizontal chalk lines or premarked underlayment to ensure straight coursing.

1. Cut and fit asphalt shingles at ridges and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap shingles at ridges to shed water away from direction of prevailing wind. Fasteners at ridges shall be of sufficient length to penetrate sheathing as specified.
2. Pattern: 1/2 spacing offset at succeeding courses.
3. Valley Construction: Woven.

D. Flashing: Install metal flashing as indicated and in accordance with details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual."

3.4 ADJUSTING

A. Replace any damaged materials installed under this Section with new materials meeting specified requirements.

END OF SECTION 07311

SECTION 07411 - PREFORMED METAL ROOFING

1.1 GENERAL

A. Drawings, Contract Clauses, Special Contract Requirements, and other Division 1 Specification Sections, apply to this Section.

B. Scope of Work:

1. This Section includes the requirements applicable to the Preformed Metal Roofing (Standing Seam Metal Roofing) to be furnished and installed over the reroof framing system. System to include roofing, fascia, gutters, and downspouts.

2. The extent of preformed roofing is indicated on the drawings and by provisions of this Section.

3. This Section includes formed sheet panels, intended for standing seam installation.

4. The preformed metal roofing shall be compatible with the reroofing framing system.

C. Related Documents:

1. Section 07415 - Reroofing Adjustable Framing System.

D. Performance Requirements

1. General: Provide manufactured roof panel assemblies complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior.

2. Air Infiltration: Provide manufactured roof panel assemblies with permanent resistance to air leakage through assembly of not more than 0.09 cfm/sq. ft. (0.45 L/s/sq. m) of fixed roof area when tested according to ASTM E 1680 at a static-air-pressure difference of 4.0 lbf/sq. ft. (192 Pa).

3. Water Penetration: Provide manufactured roof panel assemblies with no water penetration as defined in the test method when tested according to ASTM E 1646 at a minimum differential pressure of 20 percent of inward acting, wind-load design pressure of not less than 6.24 lb/sq. ft. (300 Pa) and not more than 12.0 lb/sq. ft. (575 Pa).

4. Wind-Uplift Resistance: Provide roof panel assemblies that meet requirements of UL 580 for Class 90 wind-uplift resistance.

5. Structural Performance: Provide manufactured roof panel assemblies capable of safely supporting design loads and vertical deflection based on testing manufacturer's standard units according to ASTM E 1592 by a qualified independent testing and inspecting agency.

6. A representative of the Standing Seam Metal Roof System (SSMRS) manufacturer, who is familiar with the design of the roof system supplied and experienced in the erection of roof systems similar in size to the one required under this contract, shall be present at the job site during installation of the SSMRS to assure that the roof system meets the specified requirements. The manufacturer's representative shall be either an employee of the manufacturer with at least two years experience in installing the roof system, or an employee of an independent installer that is certified by the SSMRS manufacturer to have two years of experience installing similar roof systems.

7. The installer shall have a minimum of 2 years experience and shall have been involved in installing at least 3 projects that are of comparable size, scope, and complexity as this project for the particular roof system furnished.

E. Submittals: In addition to Product Data, submit Shop Drawings, installation instructions, color samples, and general recommendations, as applicable to materials and finishes for each component and for total panel assemblies. Submit certification by manufacturer that products have been pretested and comply with performance requirements indicated.

F. Field Measurements: Prior to fabrication of panels, take field measurements of structure or substrates to receive system.

G. Warranty: Provide warranty covering failure of the factory-applied exterior finish on roof panels for a period of 20 years after date of Final Inspection.

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide panels by one of the following:

1. Steel Roof Panels:

   a. McElroy Metal, Inc. (Masterlok - 90).
   b. AEP-Span (Snap-Seam).
   c. Berridge Manufacturing Co. (High Seam Tee-Panel).
   d. Carlisle Engineered Metals.
   e. Fabral/Gentec Building Products, Inc.
   f. Steelco/MCP.

B. Steel Panels: Structural-quality steel sheet galvanized according to ASTM A 653, G90 (ASTM A 653M, Z275); 0.034 inch (0.85 mm) thick, unless otherwise indicated. Form panels of 24-gauge zinc-coated steel sheets.

1. Provide a standing seam type profile with a rib height of 3", panel width 24" and panel coverage 24".

2. Finish: Coil coated with 2-coat fluoropolymer according to ASTM A 755 (ASTM A 755M), composed of inhibitive primer and color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight, with a total minimum dry film thickness of 0.9 mil (0.023 mm); in color as selected by Contracting Officer from manufacturer's full range of colors. Color range shall be equivalent to Berridge "Parchment."

C. Standing-Seam Roof Panel Assembly: Designed for concealed mechanical attachment of panels to roof purlins or deck. Snap-lock panels - self locking assembly.

1. Clips: 0.0625-inch- (1.6-mm-) thick, stainless-steel panel clips designed to meet negative-load requirements. Heads gasketed where exposed on exterior.
2. Cleats: Mechanically seamed cleats formed from minimum 0.0250-inch- (0.65-mm-) thick, stainless-steel or nylon-coated aluminum sheets.

D. Provide details for construction of internal gutters and rain water leaders as indicated in drawing. Both shall be fabricated from not less than 16 gauge material with finish on exposed surfaces to match roof panels. Provide liners within roof drainage system to reduce possibility of leaks.

E. Thermal Spacers: Where panels attach directly to purlins, provide thermal spacers recommended by panel manufacturer. Roof panels shall be free to move in response to the expansion and contraction forces resulting from a total 200 degree temperature range during the life of the structure.

F. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

G. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam strips.

H. Sealing Tape: Pressure-sensitive, polyisobutylene tape with release paper backing.

I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat.

1.3 EXECUTION

A. Examination: Examine substrates and conditions for compliance with requirements affecting performance of metal panel roofing. Examine roof framing to verify that purlins, angles, channels, and other secondary structural panel support members and anchorage have been installed according to written instructions of panel manufacturer. Do not proceed with roof panel installation until unsatisfactory conditions have been corrected.

B. Panel Installation: Comply with panel manufacturer's written instructions and recommendations for installation. Anchor panels securely in place, with provisions for thermal and structural movement. Field cutting exterior panels by torch is not permitted. Install panels with concealed fasteners, unless otherwise indicated.

1. Standing-Seam Roof Panel Assembly: Fasten panels to supports with concealed clip according to panel manufacturer's written instructions. Install clips at each support with self-drilling/self-tapping fasteners.

C. Accessories: Install components required for a complete roof panel assembly including trim, copings, fasciae, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items. Accessories shall be capable of resisting the design wind uplift loads, and shall allow for movement of the roof panel system.

D. Separate dissimilar metals with a bituminous coating, rubberized-asphalt underlayment, or by other means recommended by manufacturers of dissimilar metals.

E. Weatherproofing: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel assemblies as recommended by panel manufacturer. Seal panel end laps and side joints as recommended by panel manufacturer. Install weatherseal under ridge cap. Flash and seal panels at eave and rake with rubber, neoprene, or other closures to exclude weather.

1. Standing-Seam Roof Panel Assembly: At end laps of panels, install tape calk between panels. Install factory-calked cleats at standing-seam joints. Apply snap-on batten to panels to provide a weathertight joint.

F. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

G. Cleaning: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

END OF SECTION 07411

SECTION 07415 - REROOFING ADJUSTABLE FRAMING SYSTEM

1.1 GENERAL

A. Drawings, Contract Clauses, Special Contract Requirements, and other Division 1 Specification Sections, apply to this Section.

B. Scope

1. This Section includes the requirements applicable to the reroofing Adjustable Framing System to be furnished and installed for the new sloped metal roofing system. All work involved with the furnishing and installation of the reroofing adjustable framing system shall be accomplished in conformance with the requirements specified herein and with related requirements covered by other sections of this specification.

C. Related Documents

1. Section 07411 - Preformed Metal Roofing

D. References

1. American Iron and Steel Construction (AISC) - Manual of Steel Construction - Allowable Stress Design, Ninth Edition.

2. American Iron and Steel Institute (AISI) - Specifications for the Design of Cold-Formed Steel Structural Members, 1986 Edition and 1989 Addendum.

3. Metal Building Manufacturer's Association (MBMA) Low Rise Building System Manual.

4. American Society of Civil Engineers (ASCE) 7-93 - Minimum Design Loads for Buildings and Other Structures.

5. Metal Roof Manufacturer's Structural Calculations, Product Information and Cautions and Erection Instructions.

6. AWS D1.3 Structural Welding Code - Sheet Steel.

7. AWS D1.1 Structural Welding Code - Steel.

8. State and Local Building Codes having jurisdiction.

E. System Description

1. The adjustable framing system shall provide support for the new roof system over the existing roof and shall adjust to accommodate the irregularities of the existing roof and form a structural platform to support the new roof system at the specified slope.

2. The adjustable framing system shall transfer loads from the new roof system to the existing roof structure in such a manner as to not overload the existing structural members. System shall be designed to be compatible with the preformed metal roofing.

3. Design the adjustable framing system to resist the forces produced by the following loads:

   a. Wind Load: Exposure C, Wind Velocity = 85 mph.

   b. Live Load/Snow Load: 25 psf minimum.

   c. Dead Load: Total of all permanently installed material including roofing, structural frame, accessories and all equipment that is fixed in position.

4. Design of the adjustable framing system shall be in accordance with AISC, Allowable Stress Design Specification for Structural Steel Buildings, Ninth Edition, 1989, and AISI, Specification for the Design of Cold Formed Steel Structural Members, 1986 and 1989 addendum.

5. The roof system shall be free to move in response to the expansion and contraction forces resulting from a total 200 degree temperature range during the life of the structure.

F. Submittal

1. Submit manufacturer's product data and installation instructions.

2. Submit shop drawings showing dimensioned layout and details of adjustable framing system, dimensioned layout of existing roof and underlying structure, attachment requirements to existing structure, bracing, slopes, parts descriptions, top member height chart and a description of how the reroofing shall proceed. Shop drawings shall be sealed and signed by a Professional Engineer registered to practice in the manufacturer's state of residence, or state of Idaho.

3. Submit a complete set of adjustable framing system structural calculations prepared exclusively for this project. Structural calculations shall be sealed and signed by a Professional Engineer registered to practice in the manufacturer's state of residence, or state of Idaho.

4. Obtain approval of all submittals prior to fabrication and installation.

G. Quality Assurance

1. Manufacturer: The adjustable framing system manufacturer shall have been in the business as an adjustable framing system manufacturer for at least five years. The manufacturer shall submit upon request at least ten projects similar in size and scope prior to commencement of work listing the Architect,

Contracting Officer, scope, location and name of the project. The manufacturer shall employ a licensed professional engineer qualified to design these systems as a full time employee.

2. Product: The adjustable framing system shall have demonstrated its suitability of this application in at least one of the following manners:

   a. Successful use on similar projects for a minimum of 5 years resulting in national acceptance of the product.

   b. Submission of proof of appropriate load testing of the system and detailed engineering analysis.

      1) The suitability of Item "b." relating to any specific system shall be at the discretion of the Contracting Officer.

3. Manufacturer's Representative: A representative of the Standing Seam Metal Roof Framing System (SSMRFS) manufacturer, who is familiar with the design of the roof system supplied, and experienced in the erection of roof systems similar in size to the one required under this contract, shall be present at the job site during installation of the SSMRFS to assure that the roof system meets the specified requirements. The manufacturer's representative shall be either an employee of the manufacturer with at least two years experience in installing the roof system or an employee of an independent installer that is certified by the SSMRFS manufacturer to have two years of experience installing similar roof systems.

4. Installer: The installer shall install the adjustable framing system in strict accordance with the manufacturers shop drawings and installation instructions. The installer shall have a minimum of two years experience in the installation of adjustable framing systems.

5. Approved Products: This specification is written with the CURA Adjustable ReRoof Framing System by ReRoof America, Inc., 6711 South Yale Avenue, Suite 205, Tulsa, Oklahoma 74136-3327, (800) 280-2872 as the basis of acceptable performance. Like products of other manufacturer's may be approved providing they meet all of the requirements specified herein and they do not infringe a patent or patents held by another manufacturer. Other approved manufacturers are Vari-Spacer by Robertson and ATA-Frame by ATAS and Vantage Point by Berridge Co.

1.2 PRODUCTS

A. Materials

1. Steel

   a. All hot rolled steel used to fabricate the adjustable frames shall have a minimum yield strength of 36,000 psi. All cold formed steel used to

fabricate the adjustable frames shall have minimum yield strength of 40,000 psi. Steel shall meet requirements of an appropriate ASTM standard and shall be certifiable.

b. The adjustable frames shall be coated with a red oxide paint or equivalent by either a spray or dip process.

c. Accessories and fasteners shall be capable of resisting the specified design wind uplift loads, and shall allow for movement of the roof panel system.

2. Fasteners

a. Shop fasteners shall be 5/16" diameter, 18 threads per inch, high strength bolts with zinc coating meeting or exceeding ASTM A449-90A Type 1 bolt requirements with locking nuts meeting the requirements of ASTM A563-90 specifications.

b. Field fasteners shall be minimum ¼" - 14 x 1" HWH #3 self-drilling/self-tapping screws coated with a corrosion resistant coating. Screws shall be manufactured by a recognized manufacturer and shall be marked with manufacturers identification symbol.

B. Framing System Design

1. Provide adjustable framing system with open web construction consisting of steel top, bottom and web members that are sized and selected specifically for this project. Adjustable framing system shall incorporate adjustable height ranges as required by this project but in no case shall total adjustability be less than six inches. Adjustability shall be achieved by an adjustable top clip, by sliding the web member vertically on the top or bottom member or by diagonal web members that rotate up or down.

2. The top member of the adjustable framing system shall be a minimum 16 gage structural shape installed in such a manner that it's top flange lies substantially in the same plane as the new roof. The top flange of the top member shall have sufficient width to accommodate attachment of the new roof system. The top member of the adjustable framing system shall accommodate its longitudinal thermal expansion and contraction by means of a slotted connection designed to satisfy the configuration of this project.

3. The adjustable framing system web members shall be a structural angle or channel factory pre-cut to the exact length required. Vertical web members and any associated splices or connections shall be designed to resist any moment created by eccentric loading of the member as well as the associated axial and shear loads.

4. Intermittent bottom members shall be factory pre-cut and the bottom flange of the bottom member shall be factory pre-punched for attachment

to the existing structure. All bottom members shall be sized and selected to distribute the new roof's loads to the existing structure without over stressing the bottom member or exceeding the allowable compressive strength of the roof.

5. The adjustable framing system shall be braced both laterally and longitudinally using steel strapping designed to satisfy the design loads and the roof system used. When bracing changes direction, component forces are created which must be taken into consideration in the design and erection of the framing system. The framing design shall include bracing as required to resist the following:

    a. Applicable horizontal loads.
    b. A minimum of 2% of the vertical load.
    c. All forces developed in the plane of the roof as a result of vertical roof loads across the ridge of the roof.

6. Shop drawings shall clearly state whether the frame was designed for fixed or floating attachment of the roof panels. If designed for floating clips, the shop drawings shall clearly state whether the system was designed for the roof panel to be fixed at the eave, the ridge, or an intermediate location.

7. Framing design shall not rely on the roof panel or flashing to transfer in plane loads across the ridge of the roof.

8. Framing system shall take into consideration the roofing systems requirement for fascia, gutters, and downspouts.

1.3 EXECUTION

A. Examination

1. Verify conditions of existing roof systems and structural supports before starting installation of the adjustable framing system. Notify the Contracting Officer of conditions detrimental to the successful installation before erecting the adjustable framing system.

B. Preparation

1. Remove existing roof-mounted equipment and modify penetrations as specified in other sections.

2. Remove gravel, built up roof, deck or uneven and loose materials as required to provide a clean, even contact surface between framing system bottom member and support elements. See Details.

3. Provide blocking and shimming as required.

C. Installation

1. General

a. Install the adjustable framing system in accordance with manufacturer's shop drawings and installation instructions.

b. Coordinate with installation of roofing and other adjacent work.

2. Fasten continuous and/or intermittent bottom members to substrate according to manufacturer's shop drawings and installation instructions.

3. Temporarily waterproof fastener penetrations and any other penetrations through existing roof.

4. Establish required top member elevations and then install highest and lowest guide frames within a roof area. Install string lines between the highest and lowest frames. Establish the elevation of intermediate frames according to string lines. Insure that string lines are tight and not sagging. Use wire and turnbuckles or other method if necessary to be certain that new roof plane is straight and true. Hold top member at required height and put web members into place. Install frame vertically. Provide temporary bracing as required. Fasten adjacent top members together as required for continuity.

5. Install permanent bracing as shown on manufacturer's shop drawings.

6. Tolerances:

a. Out-to-Plane: The top members of the adjustable frames shall not vary from the theoretical plane of the new roof bearing by more than ¼" inch individually and 1 inch in 180 inches overall slope.

b. The adjustable framing system shall be installed in a plumb and vertical position. Out of plumb tolerance shall not exceed ¼" inch in 60 inches.

c. The top support beam surface of the adjustable framing system supporting the new roof shall not be out of plane with the new roof by more than ¼" inch.

D. Delivery, Storage and Handling

1. Deliver adjustable framing system in marked bundles of like size and configuration. Deliver top support members, bottom members and factory pre-cut web members bundled separately.

2. Store on supports so as to maintain adjustable framing system in a dry, clean segregated condition.

3. Handle adjustable framing system so that individual members and factory-made joints are not over stressed during shipping, storage and erection.

END OF SECTION 07415

SECTION 07510 - CONVENTIONAL BUILT-UP ROOFING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK: Furnish the administration, facilities, materials, labor, equipment, and quality control (QC) necessary to integrate the work into the total building system so that leakage into the Built-Up Roof System (BURS) or the building does not occur. The BURS is an assembly of components including the underlayment and insulation as applicable, and roofing membrane, final surfacing, bituminous and metal flashings, and all related parts necessary to complete the assembly. The BURS manufacturer is the roofing membrane manufacturer, who may or may not manufacture and market the other components of the BURS. Complete the work to assure that the BURS satisfies the quality control standards of the BURS manufacturer's 20-year warranted system. The BUR Manufacturer Contractor's Certification, Appendix C (Submittal #1), is a qualification for this contract. Have the BURS manufacturer of the proposed roofing system execute Submittal #1 at contract award. The submittal may be included in the bid proposal submitted to the Air Force. QC procedures, tolerances and testing are specified in these contract documents. Nonconforming work will be rejected as a violation to these specifications.

1.02 STORAGE OF MATERIALS: Store roofing materials such as insulation, felts, roll roofing, and so forth, under cover (building, van trailers or water proof canvas tarpaulin) to protect them from rain or snow. Materials must be stored on raised platforms or pallets. Vinyl or polyethylene sheets or insulation shipping wrappers are not suitable covering and material so stored will be marked, rejected and removed from the site. Materials shall remain on the original shipping pallets or placed on raised platforms to keep them off the ground or storage surface. Store all rolled goods on pallets or raised platforms ON END and not laid flat on the storage surface. Damaged or "flattened" rolls will be rejected and removed from the job site. Protect all cants and tapered edges from the weather at all time. Store packaged asphalt in a protected area to prevent contamination during storage. Do not use wet materials. Maintain surfacing aggregate as defined by ASTM D1863.

1.03 COORDINATION REQUIREMENTS: Coordinate roofing operations with sheet metal work so that flashings are installed to permit continuous roof surfacing operations the same day felts are installed where practical. If gravel stops or perimeter flashings are not installed on the same day as roof completion, nail the roof membrane at perimeters with large-headed nails 8 inches on-center to perimeter wood nailers and seal against water entry with glass fabric set in roofing cement. Coordinate roofing operations with roof insulation work so that all insulation applied each day is waterproofed the same day with the complete roofing system. Graveling-in may be delayed for designated roof areas where specified.

1.04 MATERIALS: Materials to be installed shall conform to applicable ASTM standards as specified. Certificates of compliance may be required from each respective material manufacturer at the discretion of the contracting officer. Provide certification for all bitumen, bulk or packaged, delivered to the construction site. Deliver all materials to be installed to the job site bearing product labels of their manufacturer.

1.05 SUBMITTALS: Submittals 1 and 2 are included in Appendix C. Obtain additional submittal forms from the contracting officer as required. Submit requests for all

changes (including resolution for variances) in writing. Do not proceed with any changes without written authorization of the contracting officer. Do not construe approvals of submittals that do not conform to the contract as a change.

A. Submittal #1: Built-Up Roofing System Manufacturer's Certification is a qualification for award of this contract. It must be submitted as part of the bid, or executed prior to award of the contract, and be accepted by the contracting officer.

B. Submittal #2: Built-Up Roof System 20-Year Labor and Material Warranty/Guaranty. The manufacturer shall provide an executed copy of the 20-Year Warranty/Guaranty upon satisfactory completion of the roofing system. A warranty substantially the same as the sample is to be provided to the contracting officer prior to final acceptance of the project.

E. Materials Approval: Within 10 days after award of each delivery order, submit to the contracting officer, certifications from the insulation and fastener manufacturers/suppliers that the materials to be used conform to specified standards as applicable to produce the BURS manufacturer's 20-year warranted system.

F. Manufacturer Publications: Four (4) copies of the following must be submitted before start of re-roofing work:

1. Provide latest edition of each BURS manufacturer's published general requirements and applicable literature for each roofing system to be used on the buildings included in this contract.

2. Provide latest editions of all other applicable materials, manufacturer's products and installation literature.

G. Contractor Reporting: Submit the following:

1. Suppliers certification for bitumen in hot bulk and truckloads of aggregate. (As required)

H. End of Job Submittals: Submit before final acceptance:

1. A plan view drawing of each roof showing location, size and date of each day's work; Location where each membrane sample was cut to include sample identification number, date sample was taken, and size of sample.

2. Submittals #1 and #2: The manufacturer shall provide the executed 20-year BUR system warranty prior to or at final acceptance, along with an as-built system summary sheet.

1.06 APPLICATION REQUIREMENTS: The technical representative will inspect and approve the surfaces immediately prior to application of roofing and flashings; coordinate this inspection. Apply the roofing or flashing to a smooth and firm surface free of ice, frost, moisture, dirt, projections, and foreign materials. Do not apply roofing

under damp or wet conditions or excessive wind conditions as determined by the contracting officer.

1.07 ROOF PROTECTION: When wheeled or other traffic over the partially or fully completed roofing is unavoidable, use adequate plank or plywood protection for the roofing. Mount mechanical application devices on pneumatic-tired wheels, and design and maintain to operate without damaging the insulation or the roofing membrane.

1.08 FIRE PROTECTION: Provide 15-pound minimum size fire extinguishers, using ammonium phosphate fire fighting agent. Locate two at each kettle, tanker, and site of hot bitumen application on the roof.

1.09 DAILY CLEANUP: Remove all debris daily from the roof. Use enclosed chute, crane and bucket or construction hoist to reduce amount of dust, dirt, and noise

1.1O ACCEPTANCE *O*F COMPLETED WORK: Acceptance of completed work will be based on its conformance to the contract. Nonconforming work will be rejected. The Air Force is not obligated to accept nonconforming work at a reduced price. Start replacement or correction of rejected work within 10 calendar days after receipt of the rejection notice.

1.11 OPERATIONAL PROCEDURES: Confine operations, movement of workmen and equipment, storage, materials and debris within limits as directed by the contracting officer. Do not load the deck or any part of the building structure or permit to be loaded with a weight which will cause excessive deflection or endanger safety or cause damage. Do not put kettles on the roof deck or roofing systems. Protect the building and surrounding area from damage or injury. Determine the nature of these operations and provide proper protection. Repair all damage caused by lack of such protection to the contracting officer's satisfaction. If repairs are not made, or if the contracting officer determines that repairs are beyond the contractor's ability, the Air Force will have the work done by others, and will charge the cost to the contractor.

PART 2 - PRODUCTS

2.01 MATERIALS: Materials shall conform to the following requirements or equivalent 20-year warranted system:

A. Applicable for the indicated slopes over all decks.

1. Slopes 1/8 inch to 1/2 inch per foot:

a. Aggregate-surfaced, with 4 plies of asphalt-coated fibrous glass felts and asphalt, ASTM D312 Type II or Type III.

b. Mineral-surfaced, with 4 plies of asphalt-coated fibrous glass felts and an additional glass fiber cap sheet and asphalt, ASTM D312 Type II or Type III.

2. Slopes 1/2-inch to 3 inches per foot: Same as 2.01.A.2 except use Type III or IV asphalt.

3. Slopes over 3 inches per foot.

    a. Mineral-surfaced with 3 plies of asphalt impregnated glass felts and a glass fiber base cap sheet and asphalt.

B. Over Steel Decks:

1. Underlayment: None

2. Insulation: Two layers (minimum).

3. Insulation attachment:

    a. First layer: Full mechanical fasteners as required by Factory Mutual Loss Prevention Data Bulletin 1-28, current edition, Windstorm Rating Class I-90.

    b. Second layer or additional layers: Asphalt Type III or as recommended by manufacturer.

4. Membrane: 4-ply roofing system.

C. Over Concrete Decks:

1. Underlayment: One ply of asphalt-coated fibrous glass felt or heavy-duty base sheet as recommended by the manufacturer.

2. Underlayment attachment: Asphalt as recommended by manufacturer.

3. Insulation: Two layers (minimum).

4. Insulation attachment: Asphalt Type III or as recommended by manufacturer.

5. Membrane: 4-ply roofing system.

D. Over Gypsum Decks:

1. Underlayment: One ply asphalt-coated fibrous glass felt or heavy-duty base sheet as recommended by manufacturer.

2. Underlayment attachment: Mechanical fasteners.

3. Insulation: Two layers (minimum).

4. Insulation attachment: Asphalt Type III or as recommended by manufacturer.

5. Membrane: 4-ply roofing system.

E. Over Wood Decks:

1. Underlayment: Five-pound rosin-sized sheathing paper overlaid with one ply of asphalt glass fiber felt or heavy duty fibrous glass base sheet as recommended by the manufacturer.

2. Underlayment attachment: Nails

3. Insulation: Two layers (minimum).

4. Insulation Attachment:

   a. First Layer: Full mechanical fasteners as required by FM I-90.

   b. Second Layer or Additional Layers: Asphalt Type III or as recommended by manufacturer.

5. Membrane: 4-ply roofing system.

2.02 BITUMEN:

A. Primer: ASTM D41 Asphalt Primer.

B. Asphalt: ASTM D312 type as specified herein or as determined by the slope requirements of the BURS manufacturer.

2.03 FELTS, FABRICS, MATS AND WALKWAYS

A. ASTM D1668 Treated Glass Fabric:

   1. Type I, for asphalt systems.

B. ASTM D2178 Type IV or Type VI Asphalt Glass Felt used in roofing and waterproofing as recommended by the manufacturer.

C. ASTM D4601 Type II Asphalt Coated Glass Fiber Base Sheet.

D. ASTM D3909 Asphalt Roll Roofing (Glass Felts) surfaced with mineral granules.

E. Organic felts for envelopes and water cutoffs.

   1. ASTM D226 Asphalt-Saturated Organic Felt Type 2 (30-16).

F. ASTM 517 Asphalt Plank for Walkways.

G. Flashing: Base flashings to be standard product of the BUR manufacturer. Modified Bitumen Flashing (APP or SBS modified) membranes may be used IAW manufactures' instructions.

2.04 CEMENTS:

A. Asphalt Base Roofing Cement: ASTM D2822 Asphalt Roof Cement, Type II

B. Flashing Cement: BURS manufacturer's standard.

C. Plastic Cement: Shall conform to FS SS-C-153 Type I Class A.

2.05 INSULATION:

A. Mineral Fiber, and Mineral Fiber Rigid Cellular Polyurethane Composite Roof Insulation Board, ASTM C 726.

B. Federal Specification (FS) HH-I-1972/GEN Insulation Board, Thermal Faced, Polyurethane or Polyisocyanurate.

1. FS HH-I-1972/2 Insulation Board, Thermal, Polyurethane or Polyisocyanurate Faced with Asphalt/Organic Felt, Polymer/Organic mat, Asphalt/Glass mat, or Polymer/Glass mat on both sides of the foam, Class I.

2. FS HH-I-1972/3 Insulation Board, Thermal, Polyurethane or Polyisocyanurate Faced with Perlite Insulation Board on one side of the foam and Asphalt Organic Felt Style 1 or Asphalt/Glass Fiber Felt on the other side of the foam, Style 2.

3. FS HH-I-1972/5 Insulation Board, Thermal, Polyurethane or Polyisocyanurate Faced with Perlite Board on both sides of the foam.

2.06 AGGREGATE: ASTM D 1863 Mineral Aggregate used on built-up roofs, graduation size 6, 7, or 67. Where ASTM D 1863 aggregate is not locally available, other types of aggregate may be used with prior approval from the Contracting Officer.

2.07 CANT AND TAPERED EDGE STRIPS.

A. ASTM C 208 Insulating Board (Cellulosic Fiber), Structural and Decorative, ASTM C 726 Mineral Fiber and Mineral Fiber, Rigid Cellular Polyurethane Composite Roof Insulation Board, or as recommended by the BURS manufacturer.

B. Size:

1. Cants: 4 inch X 4 inch or as required by conditions. In high wind areas, install cants in compliance with FM I-90.

2. Tapered Edge Strips: 1-1/2 inch X 18 inches or as required by conditions.

2.08 FASTENERS

A. Nails: Nonferrous or galvanized steel.

B. Bolts and Nuts: ASTM A307 Carbon Steel Externally and Internally Threaded Standard Fasteners, hot-dip galvanized.

C. Roofing Fasteners: Fasteners used to fasten to steel, wood and gypsum decks must be approved by FM as evidenced by being listed in the FM Approval Guide for I-90 windstorm rating when used with the specified insulation. Fasteners shall be the threaded type that will fill the penetration through the deck. Fasteners shall be treated to prevent corrosion according to FM Std 4470.

D. Underlayment, Roof Membrane, and Base Flashing Fasteners: Types as recommended by the BURS manufacturer.

E. Sheet Metal Fasteners:

Metal Type	**Fastener Material**
Galvanized Steel	Galvanized or Cadmium Plated steel
Copper	Copper or Bronze
Lead	Galvanized or Cadmium-plated steel
Lead-coated Copper	Copper or Bronze

2.09 SHEET METAL:

A. Galvanized Steel: ASTM A526 hot-dipped zinc-coated sheet steel, commercial quality. Coating designation G 90, not chemically treated, not oiled, phosphatized.

B. Copper: ASTM B370 copper sheet and strip for building construction, cold-rolled temper.

C. Solder, Flux, and Accessories: As necessary and compatible with the material being installed.

D. Pre-finished Galvanized Steel: ASTM A 526, Steel Sheet, Zinc-Coated (Galvanized) by the Hot-dip Process, Commercial Quality, coating designation G 90, not chemically treated, not oiled, phosphatized. Factory pre-finished galvanized steel shall be primed and coated with a full strength fluoropolymer (containing a minimum of 70% Kynar 500 resin). Color shall be selected by the contracting officer but shall be a standard factory color to match or complement the existing color scheme. Provide the manufacturer's 20-year warranty.

2.10 WOOD PRODUCTS

A. Lumber Species: Choose from the following: Douglas fir, northern white pine, ponderosa pine, southern pine, jack pine and red pine.

B. Grades: Choose either Western Wood Products Association (WWPA), grading rules for the specified grades for lumber provided. Plywood panels shall meet the requirements of the latest edition of U.S. Product Standard PS 1.

1. Exterior trim, soffits, and wood exposed to view.
   a. Lumber:

      (1) WWPA: Selects and finish class, “D” Select Grade or

   b. Plywood: American Plywood Association (APA), veneer grade A-C, plywood, exterior.

2. Enclosed and incorporated into the roof system (for example, nailers, sleepers, blocking, and decking):

   a. Lumber:

      (1) Thickness less than 2 inches, and all widths: WWPA Board Class No. 2 common grade.

      (2) 2 to 4 inches thick, and 2 to 4 inches wide: WWPA, Structural light framing class, No. 2 grade.

      (3) 2 to 4 inches thick, and 4 inches and over in width: WWPA, Structural joists and planks Class, No. 2 grade.

   b. Plywood for all uses except decking, choose from the following:

      (1) APA, veneer grade C-C plugged, plywood, exterior.

      (2) APA, veneer grade C-D plywood, Exposure 1.

      (3) APA, Structural I or II Rated Sheathing, Exterior.

      (4) APA, Structural I or II Rated Sheathing, Exposure 1.

   c. Plywood for decking:

      (1) APA, veneer grade C-C, plywood, Exterior.

      (2) Minimum 1/2-inch thickness required.

C. Preservative Treatment:

1. Exterior trim, soffits, and wood exposed to view: Do not treat with preservatives.

2. Enclosed and incorporated into the roof system: American Wood Preservers Bureau (AWPB) specification LP 22 standard for lumber, timber, and plywood pressure treated with water-borne preservatives for ground contact use. (July 1975), except, do not use acid copper chromate (ACC) preservative. Dry preservative-treated wood products after treatment to values specified in LP 22.

D. Moisture: The allowable moisture content for lumber and plywood is to be 12 percent. For exterior trim, soffits, and wood exposed to view, the moisture

content applies at the time it is painted. For wood enclosed and incorporated into the roof system, the moisture content specified in LP 22 applies at the time of enclosure.

E. Marking:

1. Each piece of lumber must bear a grade stamp or grade mark showing the association under whose rules it was graded, the grade, the species, and either "S-DRY," "KD," or ZMC 15."

2. Each panel of plywood must bear the appropriate trademark of the American Plywood Association (APA).

3. Each piece of preservative-treated lumber and plywood must bear the AWPB quality mark.

2.11 SEALANTS:

A. Sealant Primer: As recommended by the sealant manufacturer in writing. All sealant must be used with a primer. If a manufacturer does not routinely require a primer, obtain a recommendation to fill this requirement.

B. Sealant Backup Material: As manufactured or recommended by the sealant manufacturer for the substrate type and joint design on this project. Unless indicated or specified otherwise, size the backup material to be slightly compressed in all joints when installed.

C. Color: As specified herein or, if unspecified, to match the adjacent substrate as closely as possible with standard stock colors.

D. Sealant type for general use: FS TT-S-230C including amendment 2 single component sealing compound, Type II, Class A. Sealant material must be urethane or acrylic polymer.

E. Use sealant whose date of manufacture shows they have not exceeded their shelf life. Do not use sealant with a date of manufacture more than 12 months old.

2.12 EXPANSION JOINT: Follow the construction details for metal cap-type roof expansion joints. For elastomeric expansion joints, follow the construction details for roof-on-roof expansion joints and the manufacture’s details for roof-to-wall expansion joints. In seismic zones 2, 3, 4, non-reinforced elastomeric expansion joints are preferred over metal. Use 26-ga. galvanized steel flange metals. Metal cap type roof expansion joints are to be installed on wood curbs extending 8 inches minimum above the roof. Metal cap-type shall be manufactured in accordance with the recommendations of the NRCA. Elastomeric-type shall have a non-reinforced EPDM or neoprene bellows with foam backing, mechanically interlock to the metal mounting flanges with a continuous bifurcated metal edge crimp. All intersections shall be pre-fabricated by the manufacturer.

2.13 FELT ENVELOPES: ASTM D226 Asphalt-Saturated Organic Felt, Type II or ASTM D227 coal tar saturated organic felt.

PART 3 - EXECUTION

3.01 GENERAL:

A. APPLICATION OF ROOFING: Finish the entire roofing system, excluding aggregate surfacing, in one operation up to the line of termination at end of day's work. Apply roofing immediately after application of insulation as a continuous operation. Phased construction is not permitted. Install BURS according to BURS manufacturer's requirements and specifications. To ensure a waterproof membrane, take care to preclude bare spots (voids) between plies. To prevent slippage, take care to preclude use of excessive amounts of bitumen. Kettle attendants shall be present at the kettle at all times during the heating. Measure application temperatures at the mop bucket or mechanical applicator. Apply asphalt at or no less than 25 degrees (F) below the manufacturer's stated EVT. Asphalt at a temperature below this shall be returned to the kettle. The surface of the felts shall be broomed-in full width to obtain complete adhesion between plies and to eliminate air pockets. *Do not use the method of mopping a half sheet width and turning the sheet back to mop under the other*. Avoid walking on mopped surfaces when the bitumen is sticky. Carry up each layer of roofing felt abutting vertical surfaces at least 4 inches, or the top of the cant strip.

B. Preparation for Roofing

1. Removals must result in a clean and dry substrate, except for residual stains, providing a surface suitable to apply new materials. A substrate surface is suitable when application of new materials results in a uniform positive and maximum bond between such materials and the substrate.

2. Remove existing roof top equipment as indicated on the drawings; all equipment remains Government property unless otherwise designated.

3. Lift or remove metal and metal accessories indicated to remain, to aid the installation of new materials.

4. If conditions are uncovered or created that would be detrimental to the application of specified work, immediately notify the Contracting Officer of such conditions for determination of treatment.

4. Roof drains are to be removed, replaced and/or adjusted as indicated to accommodate the new roofing system. Protect existing drainage system during construction. Provide tapered insulation around the roof drains as shown in the standard roof drain details.

3.02 UNDERLAYMENT INSTALLATION

A. Concrete Decks: Prime the deck with a uniform coating of asphalt primer at the rate of one gallon per square and allow drying. Apply one ply of the specified felt underlayment in a strip or spot mopping of hot and fluid asphalt with 2-inch side laps and 6-inch end laps minimum per manufacturer's specifications. NOTE: On precast concrete decks, treat joints as recommended by BURS manufacturer, and hold back primer and asphalt moppings 4 inches minimum from panel joints.

B. Gypsum Decks: Apply one ply of the specified felt underlayment with 4-inch side laps and 6-inch end laps minimum. Attach with specified mechanical fasteners through side laps on 6 to 9-inch centers. Also, stagger nail center of sheets at approximately 18 inches on-center, in two parallel rows, 10 to 12 inches from the edges of the base ply. Do not drive fasteners into or between the metal edges of the gypsum planks.

C. Wood Decks:

1. Completely cover the deck with one ply of sheathing paper. Lap each sheet a minimum of 2 inches and nail sufficiently to hold in place.

2. Over the sheathing paper, apply one ply of the specified felt underlayment with 2-inch side laps and 6-inch end laps minimum. Nail through side laps on 6 to 9-inch centers and stagger-nail center of sheets at approximately 18 inches on center in two parallel rows, 10 to 12 inches from the edges of the base ply.

3.03 INSULATION INSTALLATION

A. General Requirements:

1. On slopes of 1 inch per foot or more, provide pressure treated wood insulation stops according to the roof insulation manufacturer's requirements.

2. Secure cant and tapered edge strips in place with asphalt; cut and neatly fit all joints and miters. Cant strip may be tacked in-place for ease of installation (approximately 3 nails every 4 feet).

3. Insulation board, cant strips and tapered edge strips that can be readily lifted or displaced by hand are not adequately secured. Reinstall all lifted and displaced items that are not damaged. Replace damaged items with new material.

4. Follow additional applicable requirements of the roof insulation manufacturer and BURS manufacturer.

B. Over Steel, Wood and Gypsum Decks:

1. First (bottom) layer:

   a. Place insulation so that side joints between boards are fully supported at all times.

   b. Stagger end joints by a minimum of 6 inches; bring boards into moderate, uniform contact.

   c. Also, secure all insulation boards in the first layer with mechanical fasteners over the entire roof deck according to FM Loss Prevention Data Sheet 1-28. Filler pieces must have at least two fasteners. Locate all fasteners such that there is at least 1 fastener every 2 square feet, or comply with FM Windstorm Class FM I-90, whichever is more stringent.

   d. Use those driving methods prescribed by the fastener manufacturer.

2. Second or additional layers: Secure in full and uniform moppings of hot, fluid bitumen; stagger end joints by minimum 6 inches; bring boards into moderate, uniform contact at sides and ends while the bitumen is hot and fluid. Offset all joints between layers by maximum dimensions in both directions.

C. Over Non-Nailable Decks With Underlayments:

1. Secure all insulation boards in full and continuous moppings of hot fluid bitumen.

2. Stagger end joints by minimum 6 inches. Bring boards into moderate, uniform contact at sides and ends while the bitumen is hot and fluid. Offset all joints between layers by maximum dimensions in both directions.

3.04 MEMBRANE INSTALLATION

A. General Requirements: Except as modified and supplemented herein, apply membrane (4-ply) to meet the quality standards of the BURS manufacturer's 20-year warranted system. On slopes over 1 inch per foot, provide nailers and backnail felts, and if required by the BURS manufacturer on lower slopes. The Contracting Officer will identify the requirement for any additional plys.

B. Felts and Roll Goods:

1. Apply felts shingle fashion and maintain proper lap distance to result in a 2-inch nominal headlap (l-inch minimum, no maximum). Maintain a straight run of felts so that kinks or fish mouths do not result, and the felts are completely flat.

   a. Bitumen Dams: Provide felt envelops at the eaves and rakes and sheet metal dams at deck penetrations to prevent bitumen drippage. Felt envelops are required for membranes using Type I

and Type II asphalt bitumen. Install sheet metal bitumen dams with the flange set in plastic cement on top of the insulation. Apply roofing felts over the flanges with the sleeve of the dam set to prevent drippage of bitumen.

b. Edge envelopes shall be organic felt strips at least 18 inches wide. Set the strip in plastic cement or type IV asphalt and position to extend 9 inches onto the nailer around the perimeter of the building with 9 inches lapped over the edge of the building. After roofing felt application is complete, fold back the 9-inch overlapped section over the plies and mop down to form an envelope around the perimeter of the membrane.

2. Once established, do not change the direction of felt application. Provide organic felt envelopes at gravel stop roof edges and sheet metal pitch dams at deck penetrations to prevent bitumen drippage.

3. Broom or squeegee each ply of roll goods into place, full width, while the bitumen is hot and fluid, such that felt does not touch felt and interply voids or skips in the bitumen do not occur. Broom or squeegee and do not walk on the freshly laid felt until bitumen has reached set temperature. Bitumen shall be visible continuously along both edges of the felt. Use NRCA Publication, Application Techniques for Glass Fiber Roofing Felts, as a recommended procedure.

3.05 FLASHING INSTALLATION

A. General Requirements: Install flashings as detailed on the drawings and/or as recommended by the manufacturer. Modified Bitumen (MB) type membranes may be used if approved and installed per BUR manufacturer's instructions (torched, hot, cold applied, etc.).

1. Prime all surfaces to be flashed with asphalt primer and allow to dry.

2. Completely bond all flashings to the substrate, and the flashing plies to each other without voids. Coat all flashing substrate and ply interfaces to achieve a full and uniformly bonded laminate. Apply flashing in a continuous layer. Brushing application is not acceptable.

3. Follow additional applicable published requirements of the BURS manufacturer.

4. Tops of all membrane base flashings must be mechanically attached to the vertical substrate with large-headed nails 6 to 9 inches on-center.

5. All side laps of membrane flashing surfacing sheets must be sealed with roofing cement reinforced with woven glass fiber 4 inches wide centered over the lap.

6. Tops of all membrane base flashings must be sealed with roofing cement reinforced with 4-inch wide woven glass fiber fabric.

B. Roof Drain Flashing: Follow applicable published requirements of BURS manufacturer or standard details (appendix B).

C. Expansion Joint Covers: Install expansion joint covers as detailed and recommended by NRCA, or Sheet Metal and Air Conditioning Contractors National Association, Inc., (SMACNA). Install and splice in accordance with the manufacturer's installation instructions. Use only fasteners and splicing materials, including adhesives, supplied for this purpose by the manufacturer.

3.06 METAL INSTALLATION

A. Fabricate and install metal as shown on drawings. Meet the requirements of the components of materials manufacturers, NRCA, SMACNA, and Copper Development Association, as they apply to this project.

B. Contractor is responsible for all the work required to make any displaced mechanical units operational. Included are repair, testing, and balancing to conform to the original level of performance as determined by the Contracting Officer.

C. Prime all sheet metal that will come in contact with bituminous materials with asphalt primer and allow to dry before applying bitumen.

D. Isolate dissimilar metals in contact by painting with a compatible bituminous coating, or by using an uncured neoprene gasket.

E. Sheet Metal with Flanges: Follow applicable published requirements of BURS manufacturer.

F. Do not overlap edge metal: Allow 1/4-inch minimum spacing between edge metal pieces. Cover gap between adjacent edge metal with a joint cover 4 to 6 inches wide set in mastic.

3.07 WOOD INSTALLATION

A. Provide wood members as indicated on drawings.

B. Provide fasteners at not more than 2 feet 8 inches on-center, and also within approximately 6 inches of each end to secure nailers to the building construction. Anchors shall be not less than 3/8-inch in diameter and shall be countersunk and flush with top of nailer.

C. Where nailers are stacked, secure the top nailer to the lower with spikes or nails of proper length, spaced maximum 18 inches on-center, staggered and within approximately 6 inches of all nailer ends. Offset ends of stacked nailers approximately 12 inches in long runs and staggered (alternated) at corners.

D. Brush apply one coat of copper naphthenate solution onto all cut surfaces of preservative-treated lumber.

E. Wood cants are to be used in critical wind areas and securely anchored to prevent warping.

3.08 SEALANT INSTALLATION

A. Follow sealant manufacturer's installation requirements except as specified herein.

B. Clean the substrate so no contaminants such as bitumen, concrete curing compound, paint, dirt, or moisture will prevent bonding of the primer or sealant directly to the substrate.

C. Prime with sealant primer, all substrates to which sealant will be applied and allow the primer to cure. This must be done regardless of whether the sealant manufacturer requires priming.

D. Except for sheet metal joints, install sealant backup material.

3.09 SURFACING

A. After roofing felts have been laid and flashings installed, uniformly flood-coat the roof surface and apply the appropriate aggregate surfacing according to BURS manufacturer requirements and specification.

B. Walkways: Where shown, embed mineral-surfaced asphalt plank treads, meeting the requirements of ASTM D517, in the flood coat prior to gravel surfacing. Space treads 6 inches apart. If pavers, grating or any other walkway system is specified, install in accordance with the BUR manufacturer recommendations.

3.10 CONTRACTOR QUALITY CONTROL

A. It is the responsibility of the contractor to ensure that the designated roofing quality control person complies with all requirements relating to the roofing work. To accomplish this, the quality controller must observe work in progress, including observation of testing and measuring conducted by the Air Force inspector (e.g., audit procedures), and report work conditions.

B. Quality Assurance (QA).

1. As specified herein, provide the QA evidence needed to establish confidence that quality control (QC) is being performed adequately.

2. Except as modified and supplemented herein, follow the published requirements and written recommendations of the BURS and other materials manufacturers. Concerning methods of installation, industry practices apply only when this contract does not address the matter.

3. Provide additional QC, if in the opinion of the Contracting Officer, the QC is not effective enough to provide conforming work. This additional QC does not constitute a change to the contract.

4. The QC is subject to audit by an Air Force inspector. Provide the inspector all information necessary for this audit.

    a. The Air Force is not obligated to inspect a contractor's work or to protect a contractor from the consequences of such work. Air Force inspection is a general examination of the contractor's conduct and work, and is solely for the purposes of the Air Force. Air Force inspectors do not have the authority to accept any work, whether or not it is conforming. Air Force inspection is not to be construed as conclusive. Information that may be offered to the contractor does not change the contract.

    b. Air Force agents, including inspectors, engineers and quality assurance evaluators, are not authorized to change the contract without the written authorization of the contracting officer. This lack of authority extends to all situations in which the actions of these agents could be construed as constituting a change.

C. Provide quality control defined as follows:

1. Quality control is the regulatory process by which the contractor measures actual quality performance, compares it with standards, and acts on the difference. The quality function is the entire collection of activities through which fitness for use is achieved.

2. Contractor inspection is a careful and critical investigation of all work to assure that it conforms to the contract, and to detect variances and act to correct them in time to prevent reworking and delay. This includes detailed, skillful examination and testing with immediate comparison to the requirements of the contract. On discovery of variance immediately institute corrective action to eliminate the variance and to insure that all future work conforms to the requirements of the contract.

3. Within 10 days after the issuance of the Notice to Proceed and before the start of roofing work, attend a preconstruction conference at the air base to review the contract. The foreman or superintendent must attend the conference. A technical representative from both the membrane and insulation manufacturers shall also be present at this conference, if requested. These representatives shall be knowledgeable in the installation peculiarities and compatibility of their product. Give an oral presentation of proposed construction method. The manufacturers' representatives shall provide input where necessary to describe the proper installation of their materials. The conference may include a visit to the work site.

D. Preparatory Inspection. (To be conducted prior to commencing work)

1. Before actual work begins, the quality controller must:

    a. Read the specifications and study the drawings.

    b. Understand any required tests and measurements.

c. Visit the roof and become familiar with its layout.

d. Attend the pre-construction conference.

2. Supply the following equipment for tests and measurements required to be performed under this contract:

a. Calibrated portable thermometer to measure the bitumen temperature at the kettle and at the point of application.

b. Triple beam scale or postal-type platform scale for weighing roof membrane samples.

c. Non-conductive measuring tape, 50 or 100 feet.

d. Hand held Delmhorst Model BD-7 Moisture Meter or approved equal for determining moisture content of materials at time of installation.

e. Sheet metal template (4 inches X 40 inches and 12 inches X 12 inches) for BUR samples. (Reference ASTM D3617.)

f. Tools required for cutting samples and splitting felt plies apart (cutting knife and blades).

g. Clear template with 1/2-inch grid for analyzing sample void area.

h. MIL gauge for measuring flood coat thickness.

3. Allowable Tolerances: The following tolerances establish the range of acceptable variances. Review these tolerances and ensure that work is in compliance. Follow manufacturer recommendations as they apply to their 20-year warranted system. If Air Force requirements are more stringent, follow them.

a. Headlap: Minimum 1 inch, no maximum.

b. Endlap: Minimum 4 inches, no maximum.

c. Insulation board joint gaps: 3/16-inch maximum between boards and 1/4-inch maximum between boards and abutting surfaces.

d. Bitumen temperatures:

(1) Maximum at kettle: Do not heat ASTM D312, Type I asphalt above 500 degrees (F) and all other ASTM D312 type asphalt above 525 degrees (F). Do not heat coal-tars above 410 agrees (F) for ASTM D450, Type I and 425 degrees (F) for ASTM, type III.
(2) Temperature at point of application: Equiviscous Temperature (EVT) plus or minus 25 degrees (F).

(3) Holding temperature: Do not heat and hold asphalt between 500 - 525 degrees (F) for more than 4 hours. Do not exceed 325 degrees (F) for overnight holding temperature for asphalt. If heating of coal-tar is desired during a non-use period, do not exceed a temperature of 325 degrees (F). If storage exceeds 4 hours, shut kettle off. Large quantities of coal-tar, 1000 gallons or more, can be held at a maximum of 300 degrees (F) for no more than 96 hours.

e. Interply moppings: As required by the BUR manufacturer plus or minus 20 percent.

f. Flood coat: Asphalt, 60 pounds per square average and at no location less than 50 pounds; coal tar, 70 pounds per square average and at no location less than 60 pounds.

g. Surfacing: Uniformly cover roof area with the quantity of aggregate specified by the BUR manufacturer. Embedded by weight, a minimum of 50 percent of the specified amount.

h. Foaming hot bitumen at point of application: Not acceptable for ply mopping construction.

i. Foreign materials between plies: None acceptable.

j. Material variance from specified: None acceptable.

k. Variance from number of plies specified: None acceptable.

l. Phased construction of membrane felts: Not acceptable.

m. Material moisture content: Maximum percent by dry weight as follows: Organic felts 2.5 pct; fiberglass felts 1 pct; lumber and plywood 12 pct; insulation as per manufacturer requirements.

n. Felt laying: Wrinkles, buckles, kinks and fishmouths: Not acceptable.

.

E. Initial Inspection: (To be conducted after a representative sample of the work is complete.

1. Review each significant feature and segment of the work each day.

2. Deliver all materials to the site, except those in quantity (bitumen in hot bulk and truckloads of aggregate) with packaging intact and with readable labels. Use those materials having labels that:

a. Identify the material.

b. Indicate conformance with the reference standard applicable to the material.

3. For bitumen in hot bulk and truckloads of aggregate delivered to the site in quantity, obtain a certification for each shipment.

4. Store and handle all materials, except bitumen, metal components, and material in sealed cans, as follows:

a. Aggregate shall comply with moisture and dust content requirements of ASTM D1863.

b. Other materials:

(1) Do not expose materials to water (rain, snow and so forth) before, during, or after delivery to the site.

(2) Completely cover materials with waterproof canvas tarpaulins to protect from weather and moisture. Arrange covers to prevent condensation from occurring beneath them; do not allow covers to extend onto the ground.

(3) Conspicuously mark unprotected materials and permanently remove these materials from the site.

5. Equip kettles and tankers with automatic thermostatic controls and keep them in working order.

6. Use separate kettles and materials application and transporting equipment for asphalts.

7. Do not use bitumens which have been overheated, heated and held beyond specified storage period, or contaminated bitumens. Permanently remove such bitumens from the site.

F. Daily Work Production:

1. Coordinate roofing operations with sheet metal work so that flashings are installed to permit continuous roof surfacing operations the same day felts are installed where practical. If gravel stops or perimeter flashings are not installed on the same day as roof completion, nail the roof membrane at perimeters with large-headed nails 8 inches on-center to perimeter wood nailers and seal against water entry with glass fabric set in roofing cement. Coordinate roofing operations with roof insulation work so that all insulation applied each day is waterproofed the same day with the complete roofing system.

2. Install temporary water cutoffs and tie-ins each workday. Remove temporary cutoffs and tie-ins so that all vertical faces of insulation are exposed at the beginning of the next day's work.

3. Do not cut the staggered insulation pieces that are already installed. Straighten the staggered insulation side of the day's work with unattached cut pieces of insulation; do not permanently include such cut pieces into the roof system.

G. Weather Considerations: Except for expedient temporary work, do not proceed with roofing work during inclement weather. Remove all temporary work before installing permanent components and materials.

H. Follow-up Inspection: (To be conducted daily to assure compliance with results of initial inspection.)

1. Check items mentioned in preparatory and initial inspections.

2. Furnish a copy of these records and contractor tests, as well as the corrective action taken to the Air Force as directed by the contracting officer.

3.11 WARRANTY SIGN: Provide 10 inch X 12 inch minimum size painted signs (see STANDARD DETAIL BUR-26) made of aluminum with a dark color background and letters of contrasting color. Use paint compatible with the aluminum. Permanently post signs at all access points leading to the roofs and prominent points on the roofs. Provide at least one sign on each roof with at least four signs on each building (located where indicated on the drawing or as directed by the contracting officer).

3.12 NON-DESTRUCTIVE TESTING: The Air Force reserves the right to perform non-destructive evaluation (NDE) of the in-place roofing assembly to determine whether or not the newly installed roofing assembly has been affected by moisture infiltration. Testing will be at Air Force expense. The contractor is encouraged to be present during the time of NDE.

APPENDIX A

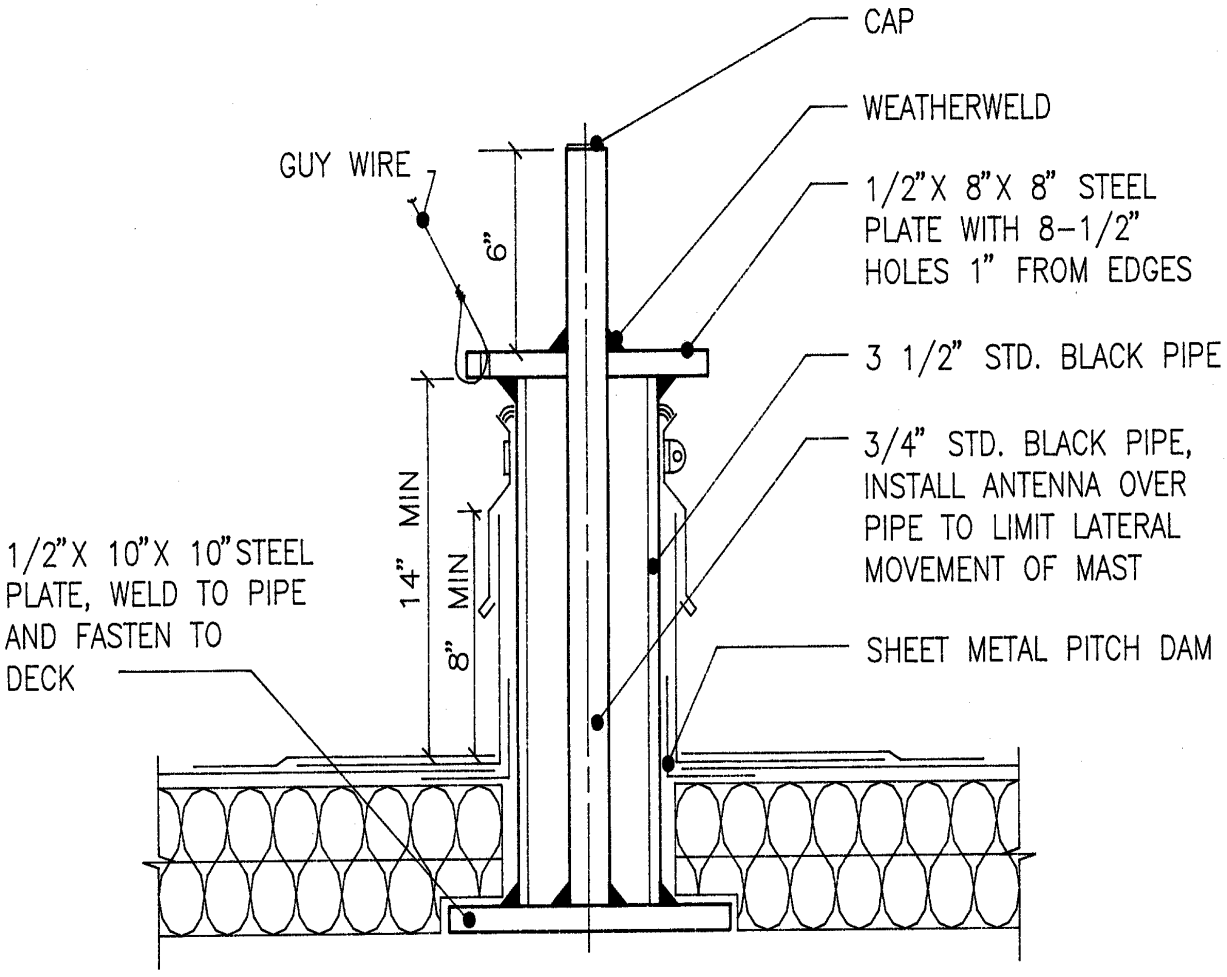
NOT USED

APPENDIX B

ROOFING

STANDARD DETAILS

STANDARD DETAILS	
DETAIL	**DETAIL DESCRIPTION**
BUR-1	ANTENNA SUPPORT BASE & GUY WIRE ANCHOR
BUR-2	BUILT-IN COUNTER FLASHING
BUR-3	CRICKETS
BUR-4	CURB
BUR-5	CURB MOUNTED UNIT FLASHING
BUR-6	EXPANSION JOINT - TYPE A
BUR-7	EXPANSION JOINT - TYPE B
BUR-8	EXPANSION JOINT ASSEMBLY
BUR-9	FACE MOUNTED COUNTER FLASHING
BUR-10	FLANGED MOUNTED GRAVEL STOP & FASCIA
BUR-11	FLANGED UNIT FLASHING
BUR-12	GUTTER AND CONDUCTOR
BUR-13	H COLUMN FLASHING
BUR-14	PARAPET COPING
BUR-15	PITCH PAN
BUR-16	REGLET MOUNTED COUNTER FLASHING
BUR-17	ROOF DRAIN FLASHING
BUR-18	ROOF DRAIN W/ GRAVEL SURFACED ROOFING
BUR-19	ROOF DRAIN W/ MINERAL SURFACED CAP SHEET
BUR-20	ROOF RELIEF VENT
BUR-21	ROOF TO WALL EXPANSION JOINT
BUR-22	SANITARY VENT PIPE
BUR-23	SELECTION GUIDE FOR METALS
BUR-24	SIGN INFORMATION
BUR-25	TUBULAR PENETRATION FLASHING DETAIL
BUR 26	WALL FLASHING AT BASE OF SIDING

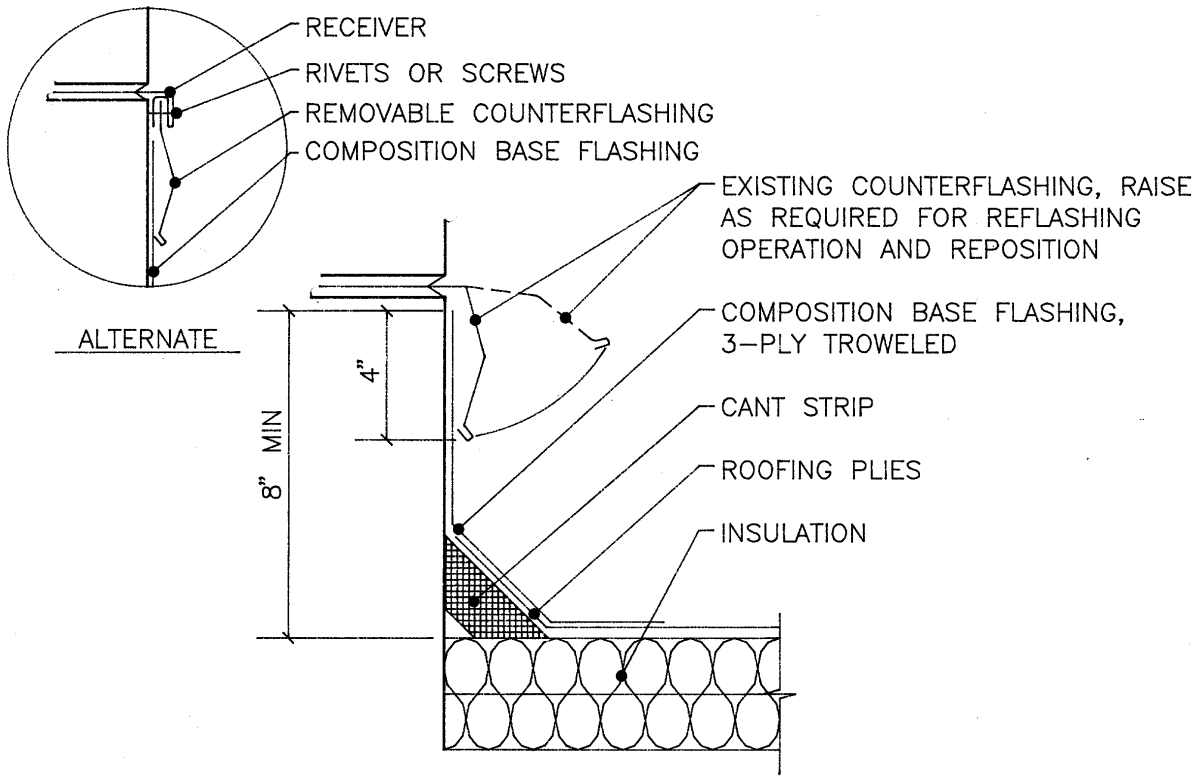


ANTENNA SUPPORT BASE & GUY WIRE ANCHOR DETAIL

NOTES:
See Applicable Notes on Detail BUR- 25 "Tubular Penetration Flashing". Indicate manner of fastening to the substrate, considering guy wire loading. Welding to the structural members or bolting through the deck to another steel plate are possible methods

DETAIL

BUR-1 Antenna Support Base & Guy Wire Anchor MOUNTAIN HOME AFB, IDAHO



NOTE:
USE ONLY AT EXISTING NONREMOVABLE COUNTERFLASHING. USE ALTERNATE METHOD WHERE COUNTERFLASHING IS REMOVABLE

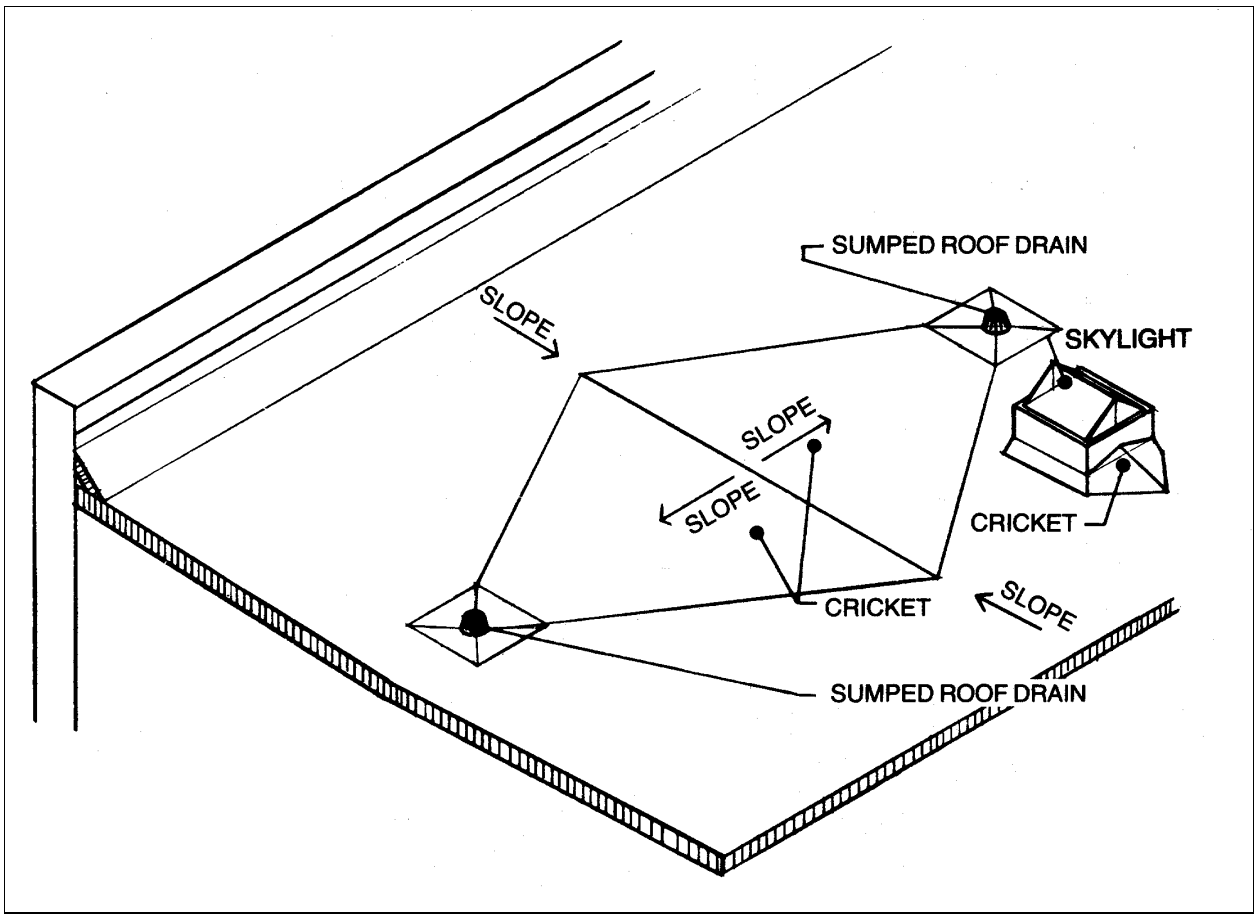
BUILT–IN COUNTERFLASHING DETAIL

NOTES:

DETAIL

BUR-2 Built-in Counter flashing

MOUNTAIN HOME AFB, IDAHO



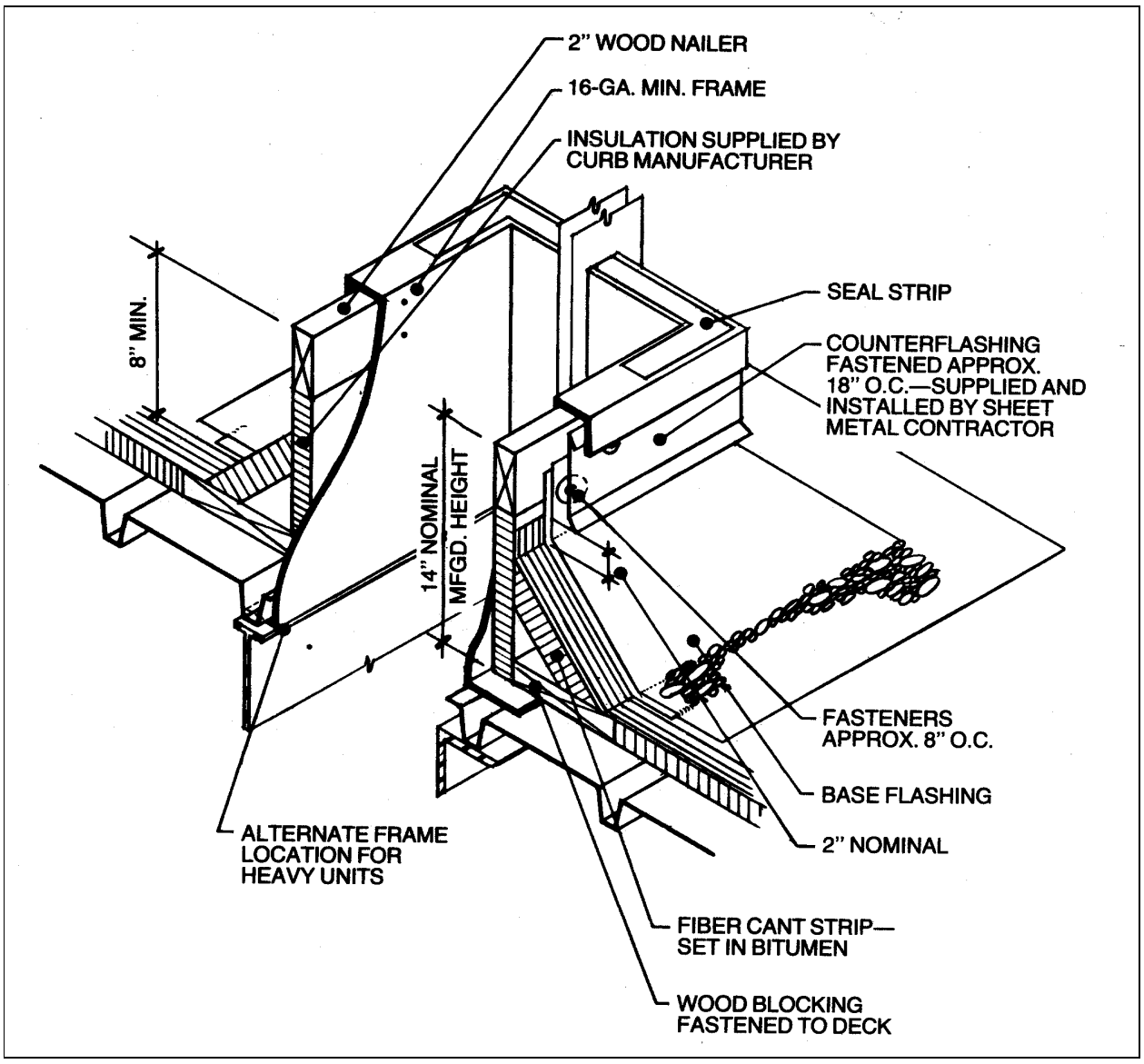
NOTES:

THIS DETAIL ALLOWS FOR BUILDING MOVEMENT IN BOTH DIRECTIONS.

DETAIL

BUR-3 Crickets

MOUNTAIN HOME AFB, IDAHO



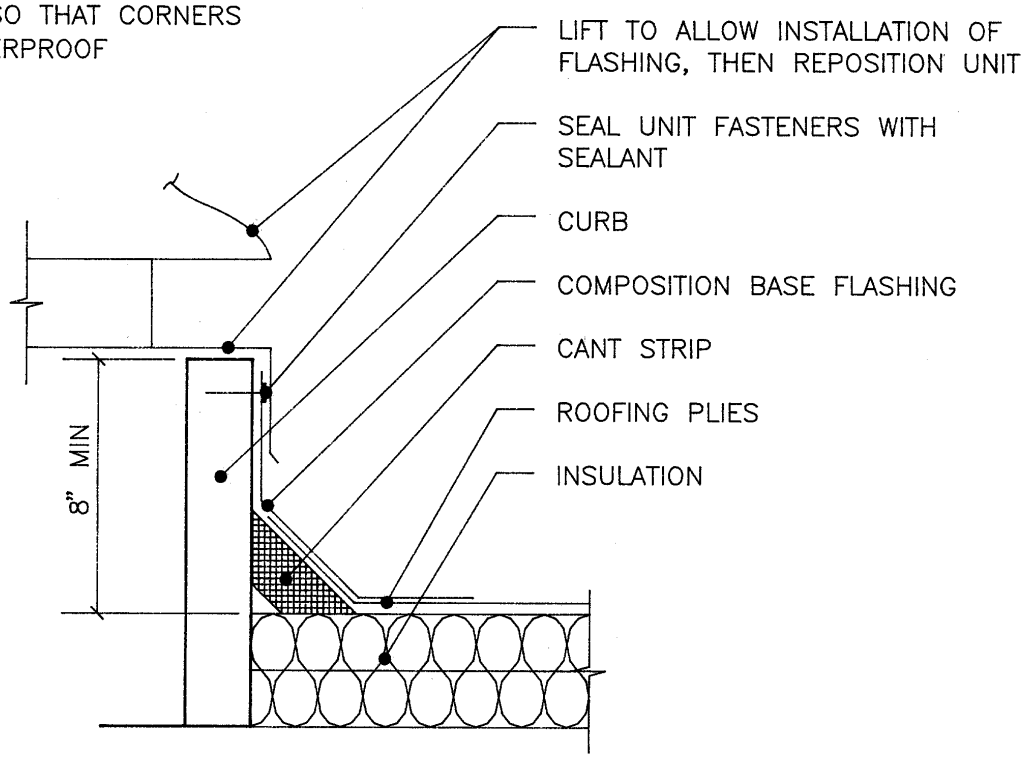
NOTES:

The curb, wood nailer, insulation and seal strip are to be supplied by the curb manufacturer. The nominal 14 inch curb height is effective as of January 1, 1981.

DETAIL

BUR-4 Curb for Rooftop Air Handling Units
MOUNTAIN HOME AFB, IDAHO

NOTE:
FOR NON–REMOVEABLE UNITS, BREAK CORNERS OF METAL COUNTERFLASHING AND BEND UP TO ALLOW INSTALLATION OF FLASHING, THEN REPOSITION AND SEAL CORNERS WITH SHEET METAL ANGLES SO THAT CORNERS ARE WATERPROOF



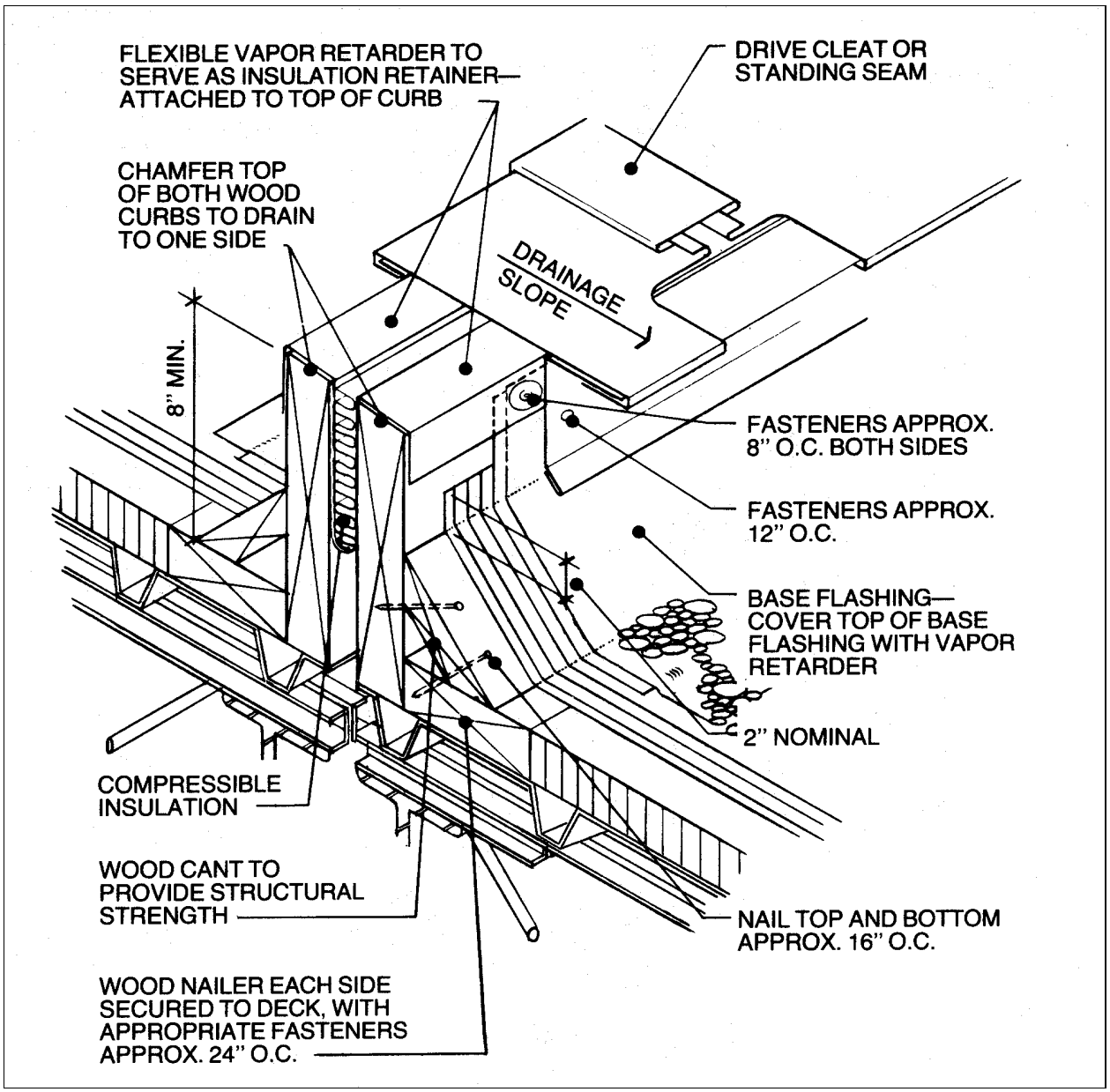
CURB MOUNTED UNIT FLASHING DETAIL

NOTES:

DETAIL

BUR-5 Curb Mounted Unit Flashing

MOUNTAIN HOME AFB, IDAHO

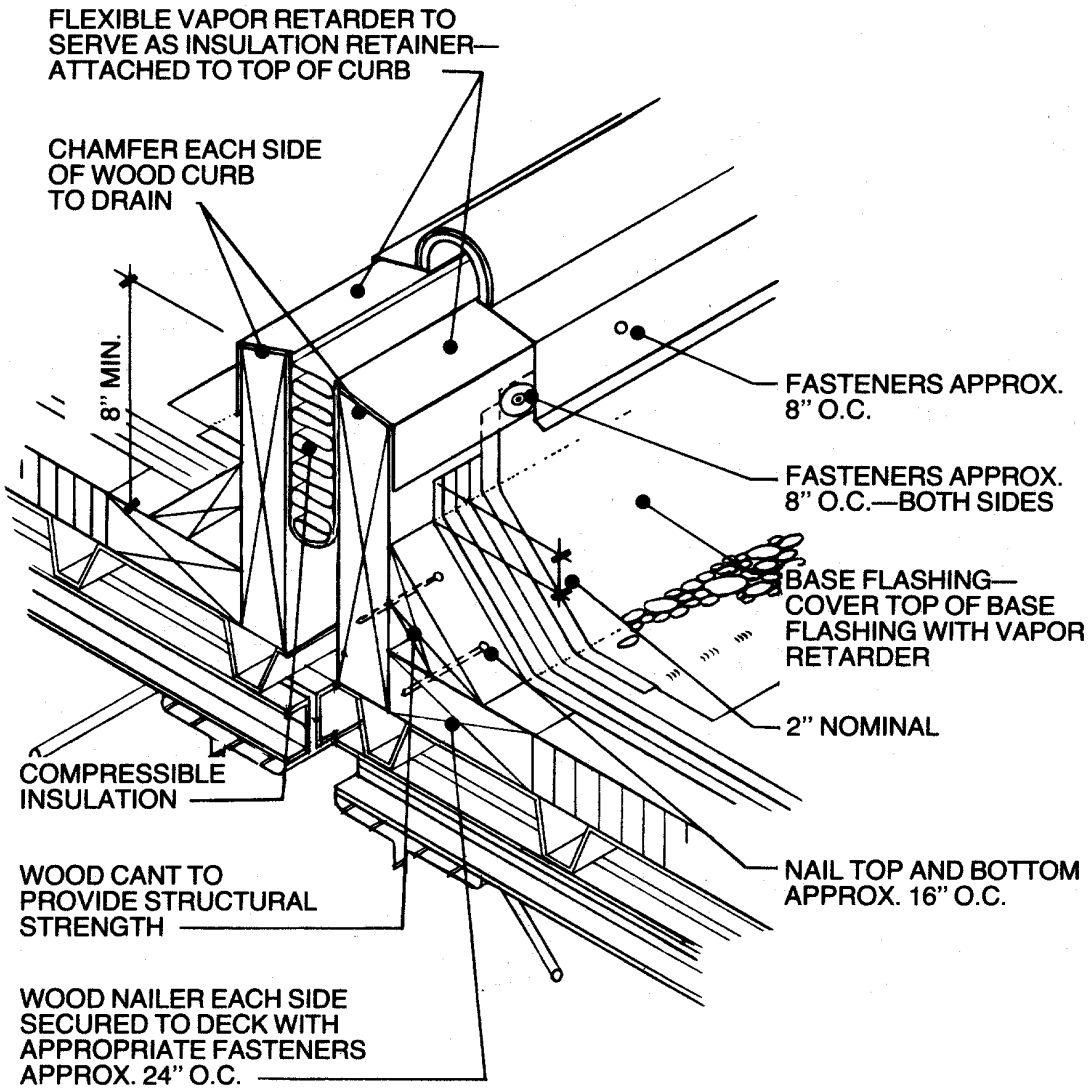


NOTES:

DETAIL

BUR-6 Expansion Joint (Type "A")

MOUNTAIN HOME AFB, IDAHO

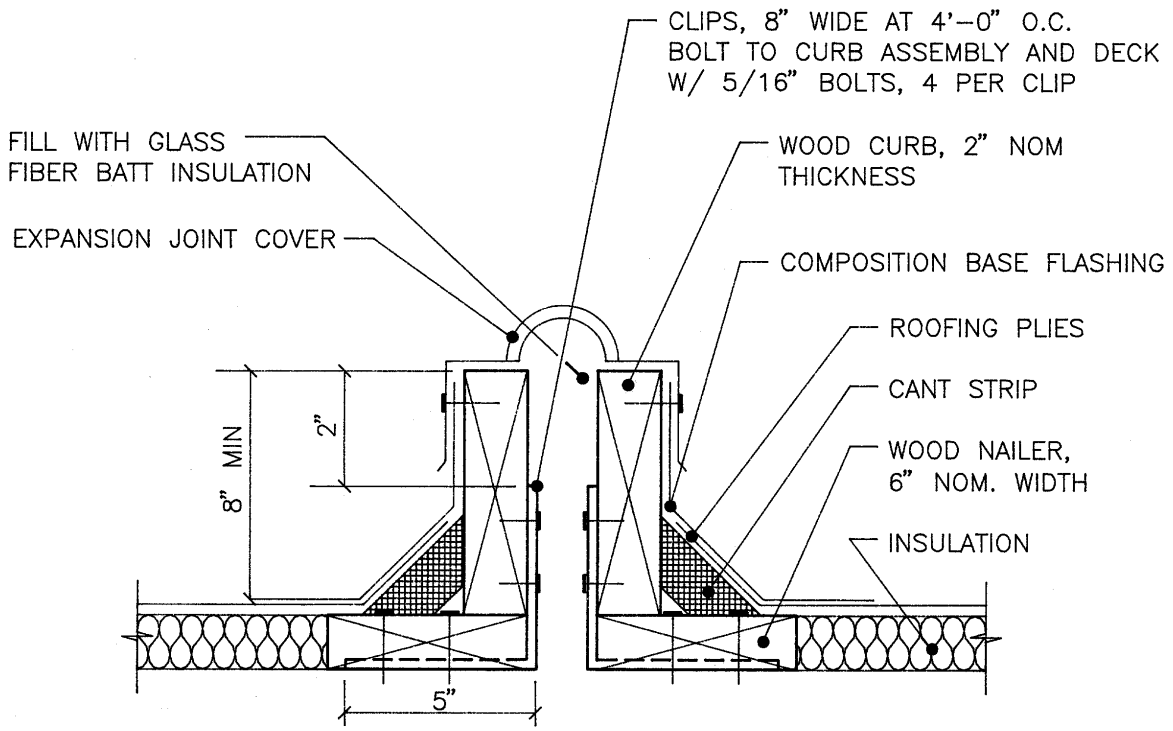


NOTES:

DETAIL

BUR-7 Expansion Joint (Type "B")

MOUNTAIN HOME AFB, IDAHO



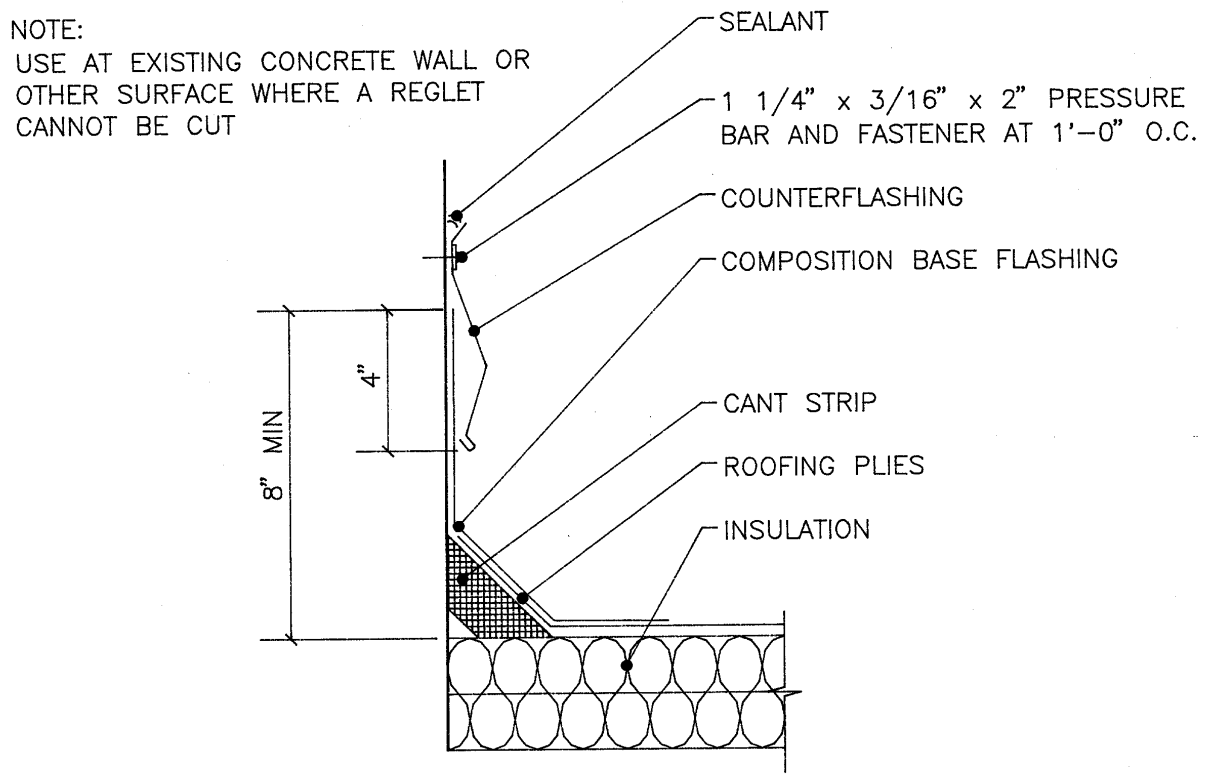
EXPANSION JOINT ASSEMBLY DETAIL

NOTES:

DETAIL

BUR-8 Expansion Joint (Type "C")

MOUNTAIN HOME AFB, IDAHO



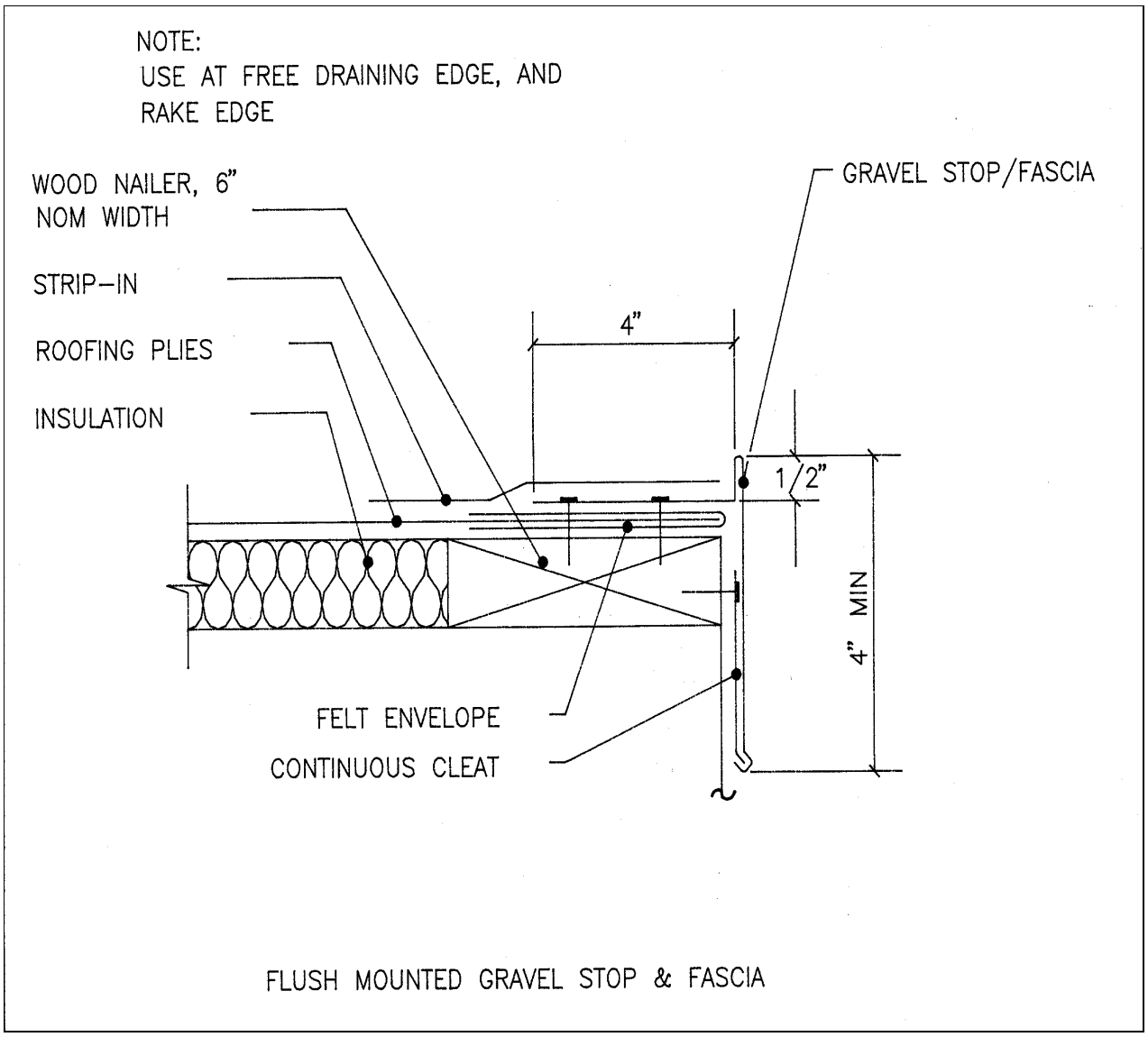
FACE MOUNTED COUNTERFLASHING DETAIL

NOTES:

DETAIL

BUR-9 **Face Mounted Counter Flashing**

MOUNTAIN HOME AFB, IDAHO



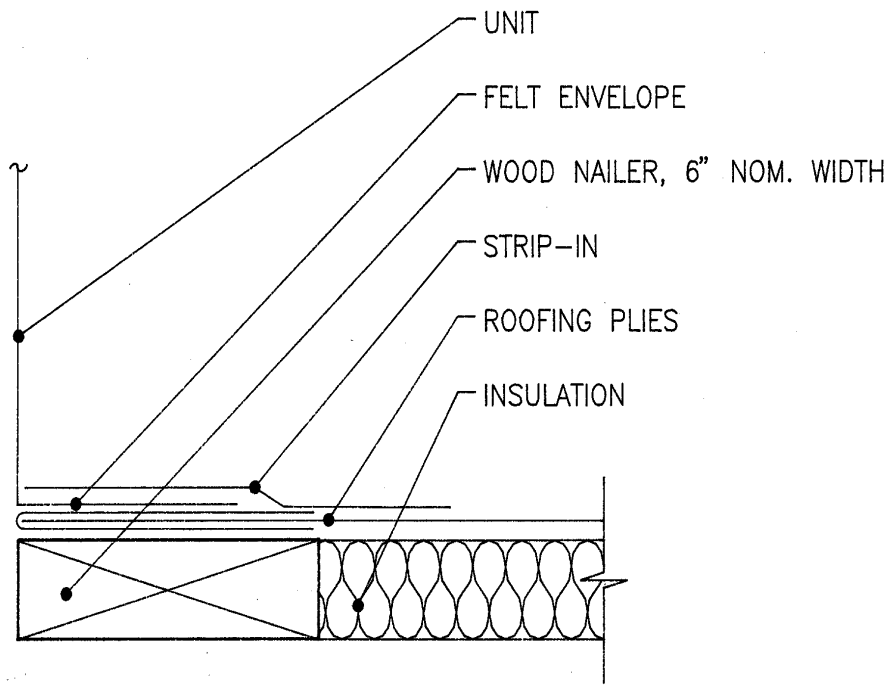
FLUSH MOUNTED GRAVEL STOP & FASCIA

NOTES:

DETAIL

BUR-10 **Flanged Mounted Gravel Stop & Fascia**

MOUNTAIN HOME AFB, IDAHO



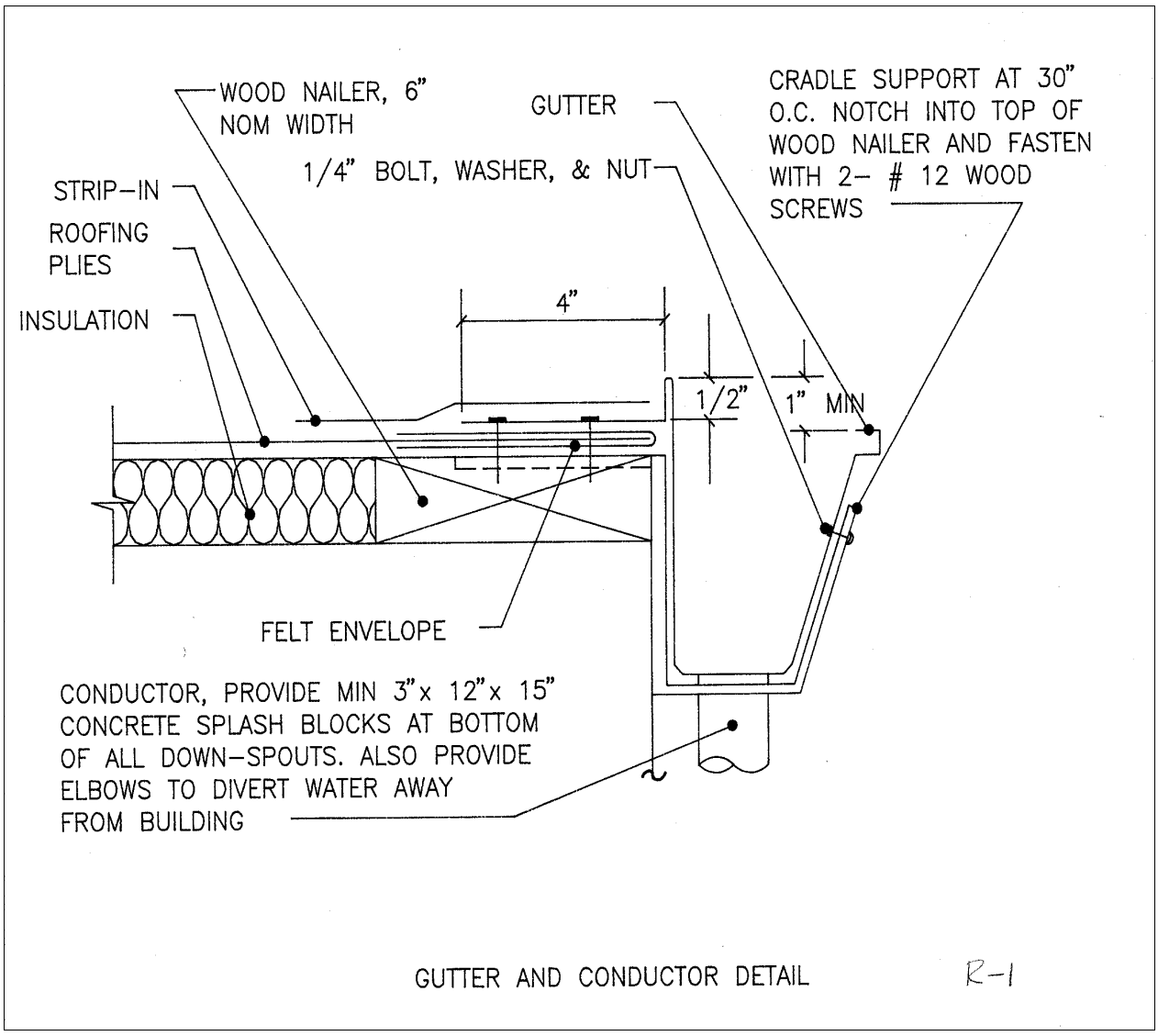
FLANGED UNIT FLASHING DETAIL

NOTES:

DETAIL

BUR-11 Flanged Unit Flashing

MOUNTAIN HOME AFB, IDAHO

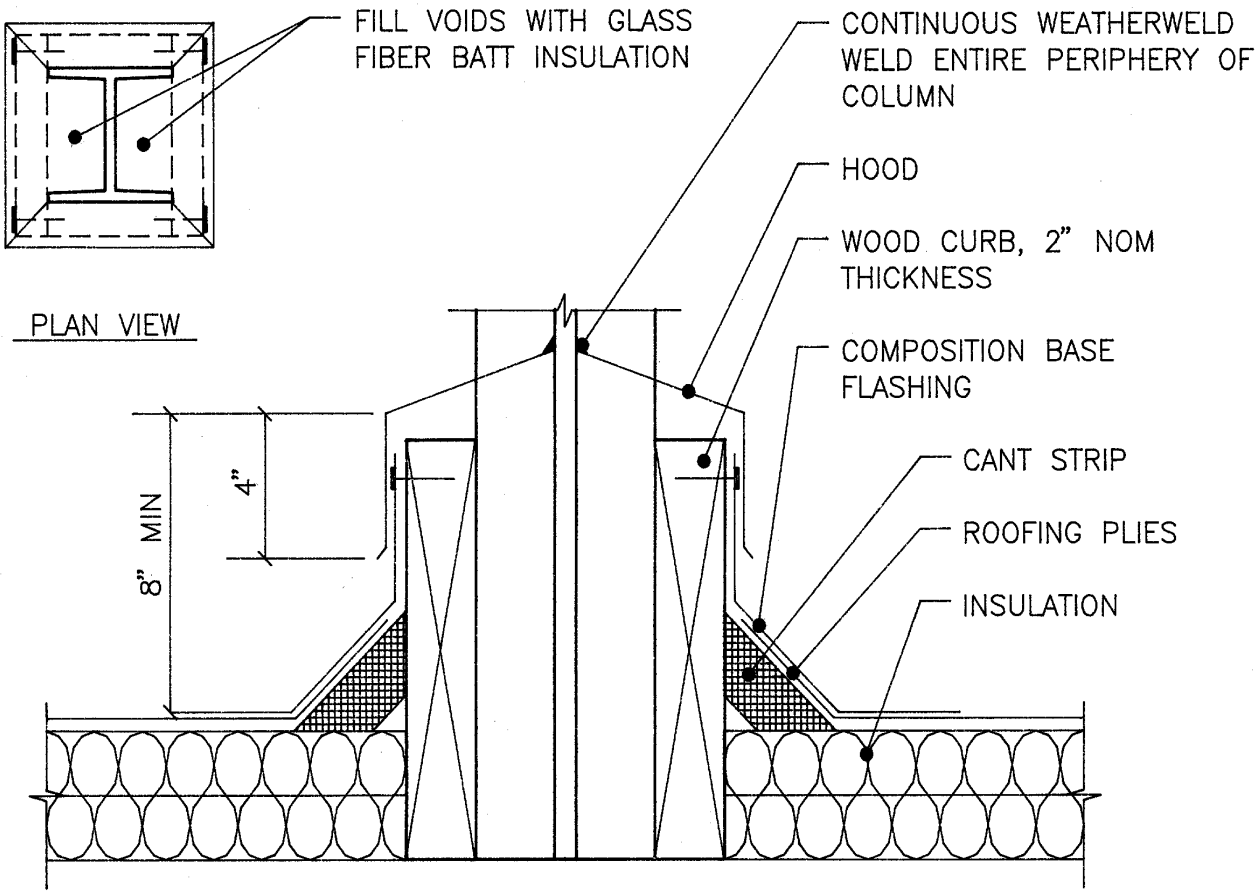


NOTES:

DETAIL

BUR-12 Gutter and Conductor

MOUNTAIN HOME AFB, IDAHO



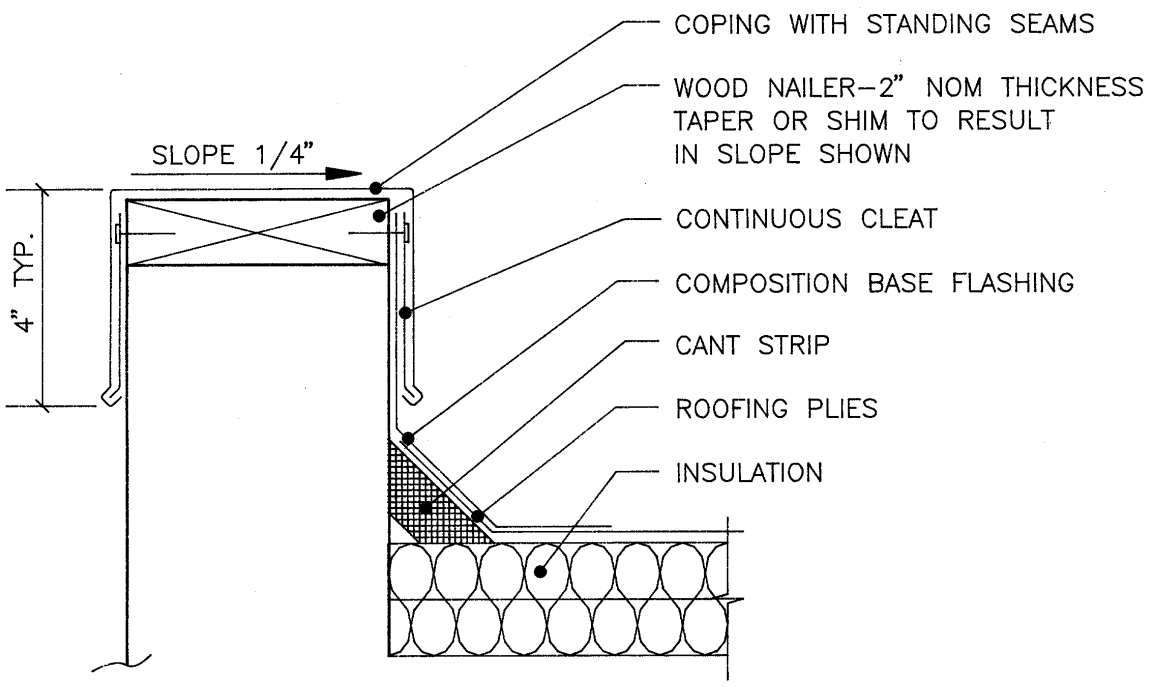
H COLUMN FLASHING DETAIL

NOTES:

DETAIL

BUR-13 H Column Flashing

MOUNTAIN HOME AFB, IDAHO



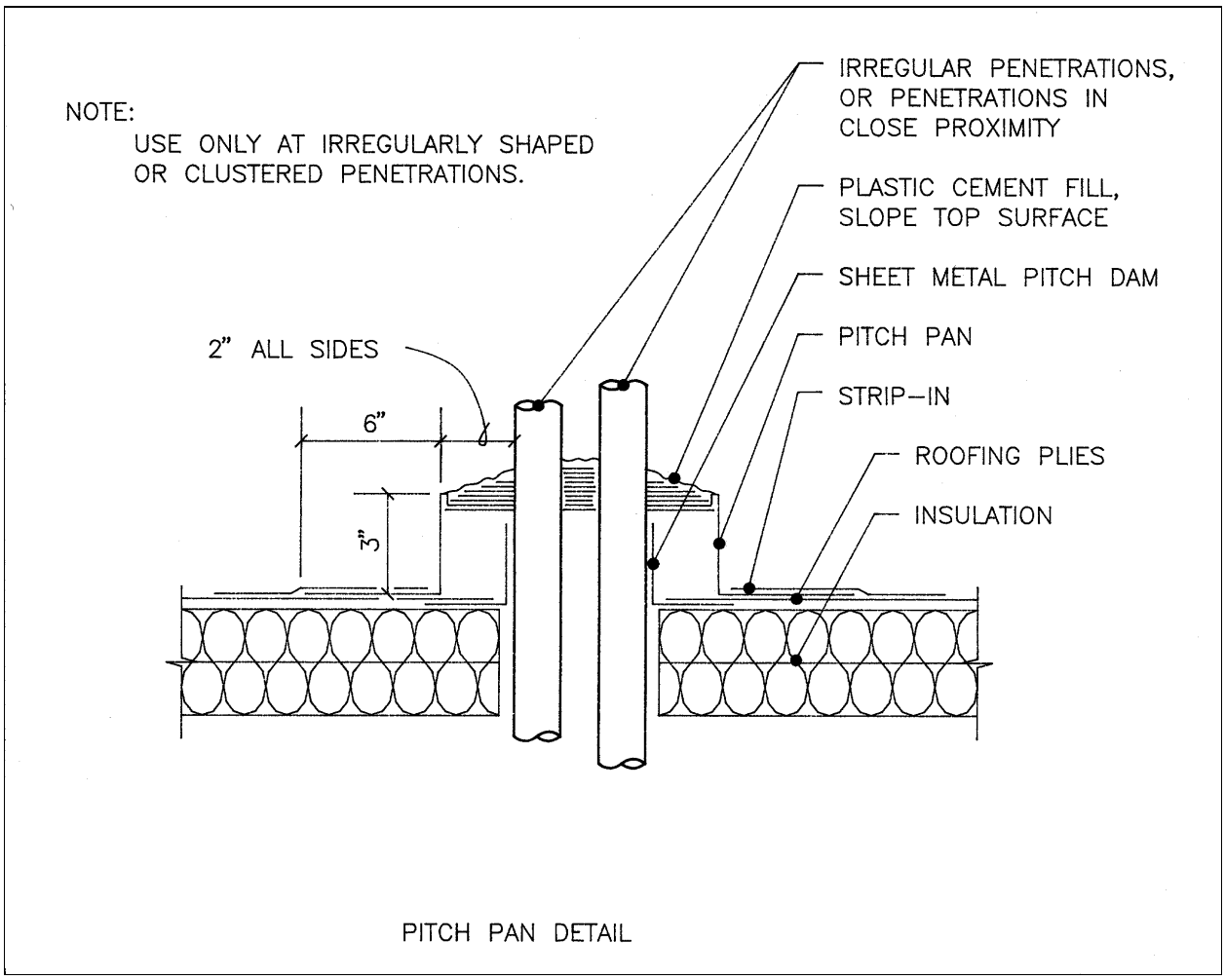
PARAPET COPING DETAIL

NOTES:

DETAIL

BUR-14 Parapet Coping

MOUNTAIN HOME AFB, IDAHO



PITCH PAN DETAIL

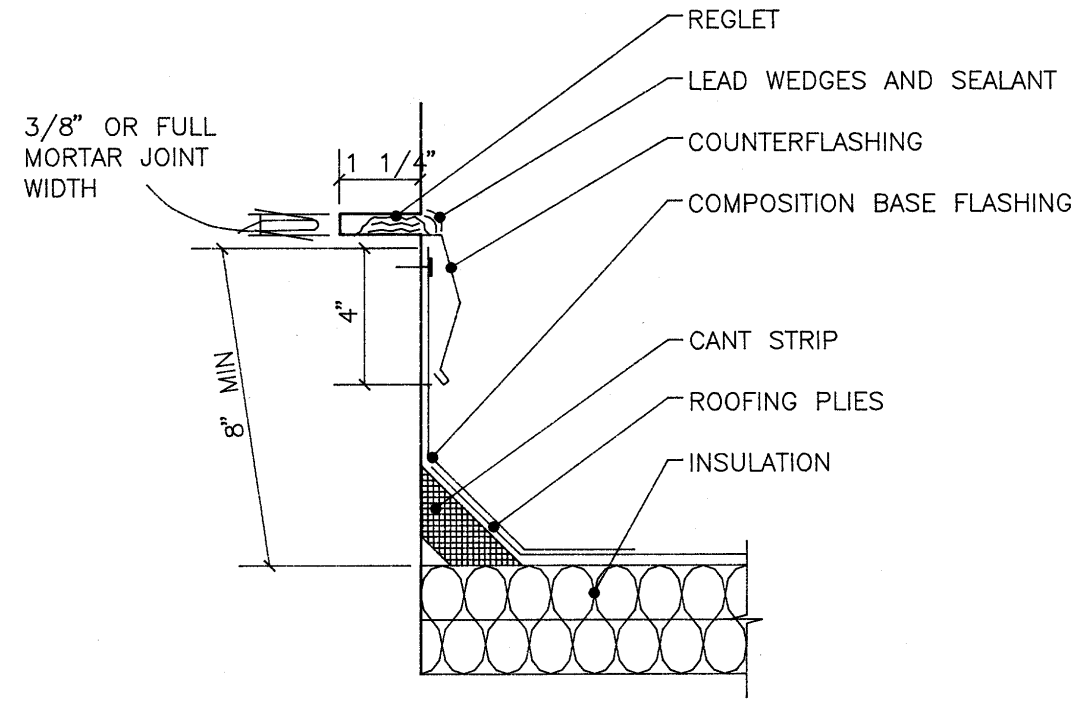
NOTES:

DETAIL

BUR-15 Pitch Pan

MOUNTAIN HOME AFB, IDAHO

USE WHERE EXISTING MASONRY WALL HAS NO PROVISIONS FOR COUNTER–FLASHING, OR EXISTING REGLET IS REUSED



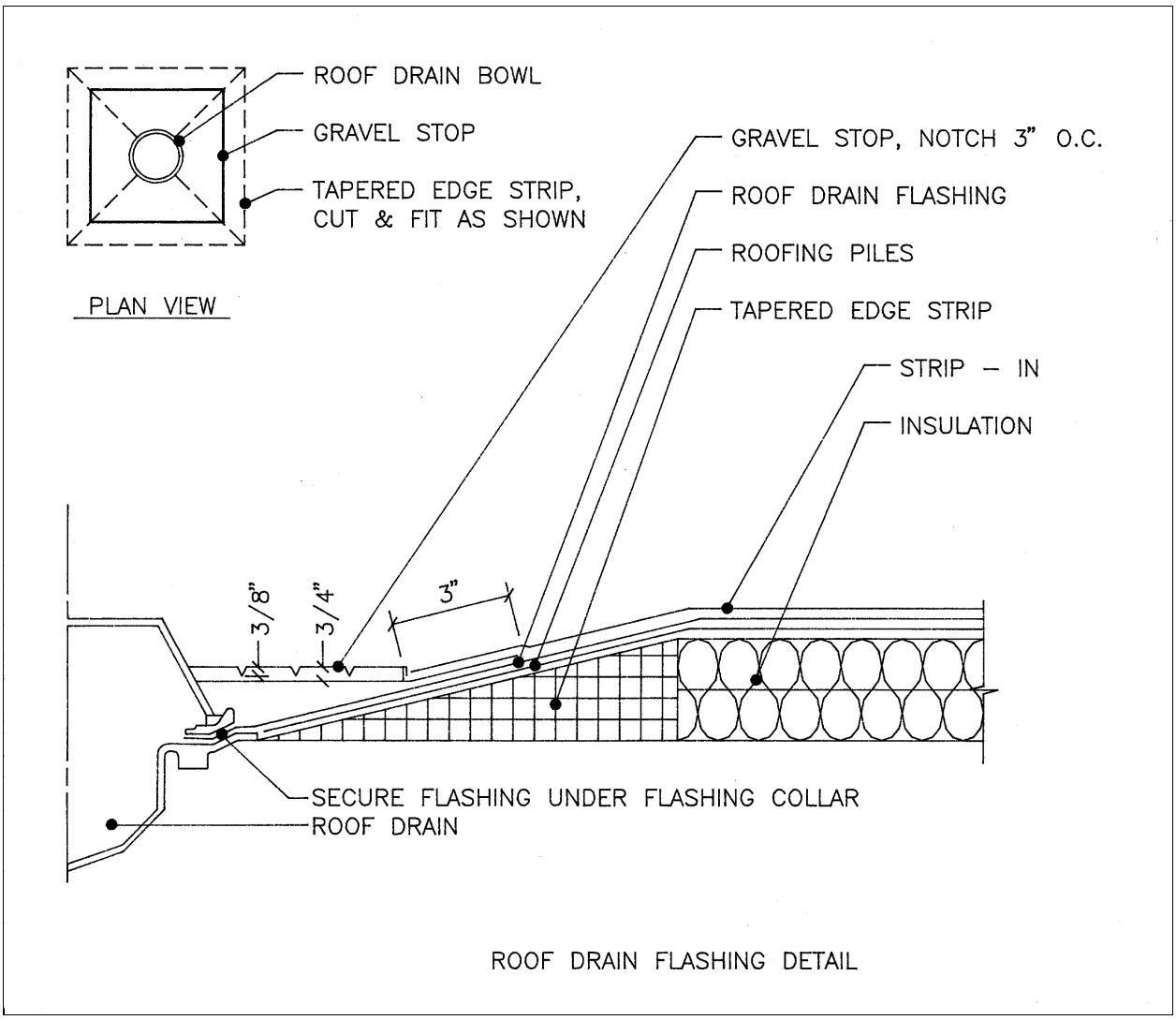
REGLET MOUNTED COUNTERFLASHING DETAIL

NOTES:

DETAIL

BUR-16 Reglet Mounted Counterflashing

MOUNTAIN HOME AFB, IDAHO



ROOF DRAIN FLASHING DETAIL

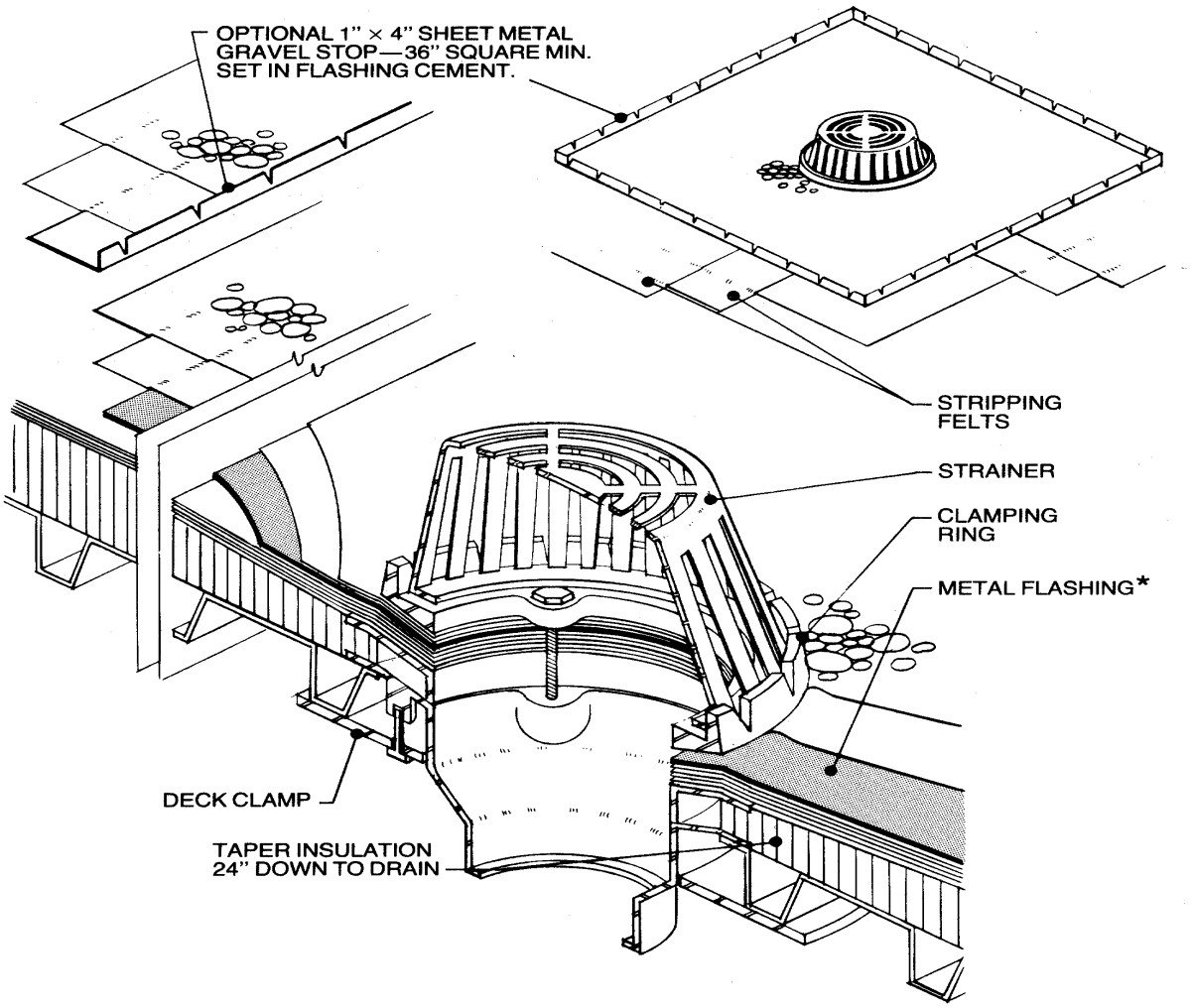
NOTES:

DETAIL

BUR-17 Roof Drain Flashing

MOUNTAIN HOME AFB, IDAHO

ROOF DRAIN



NOTES:

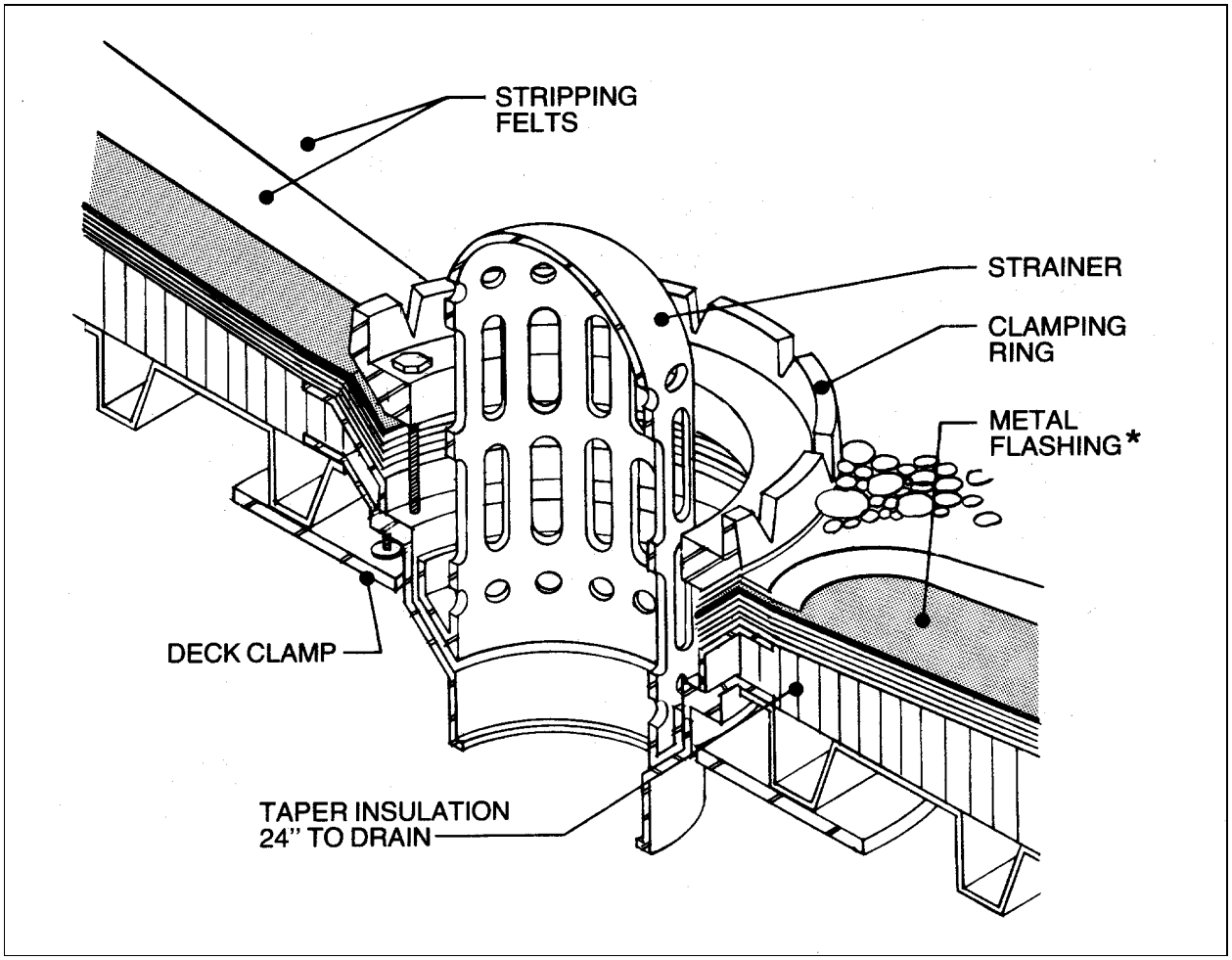
***MIN. 30" SQUARE 2 1/2 LB. TO 4 LB. LEAD OR 16 OZ. SOFT COPPER FLASHING SET ON FINISHED ROOF FELTS IN MASTIC, PRIME TOP SURFACE BEFORE STRIPPING.**

MEMBRANE PLIES, METAL FLASHING, AND FLASH-IN PLIES EXTEND UNDER CLAMPING RING.

STRIPPING FELTS -- EXTEND 4" AND 6" BEYOND EDGE OF FLASHING SHEET, BUT NOT BEYOND EDGE OF SUMP.

DETAIL

BUR-18 Roof Drain with Gravel Surfaced Roofing
MOUNTAIN HOME AFB, IDAHO



NOTES:

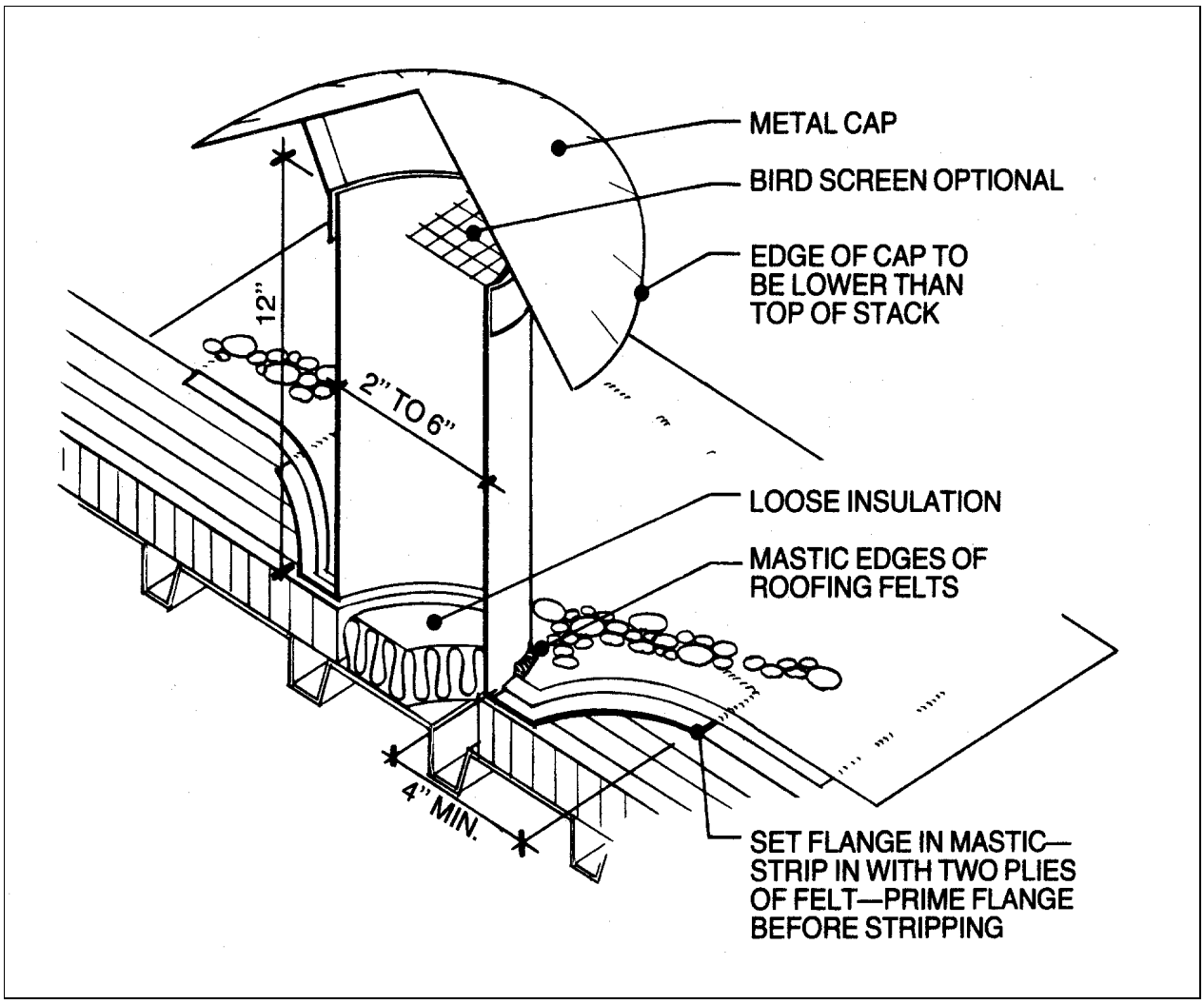
***MIN. 30" SQUARE 2 1/2 LB. TO 4 LB. LEAD OR 16 OZ. SOFT COPPER FLASHING SET ON FINISHED ROOF FELTS IN MASTIC, PRIME TOP SURFACE BEFORE STRIPPING.**

MEMBRANE PLIES, METAL FLASHING, AND FLASH-IN PLIES EXTEND UNDER CLAMPING RING.

STRIPPING FELTS -- EXTEND 4" AND 6" BEYOND EDGE OF FLASHING SHEET, BUT NOT BEYOND EDGE OF SUMP.

DETAIL

BUR-19 Roof Drain with Mineral Surfaced Cap Sheet MOUNTAIN HOME AFB, IDAHO



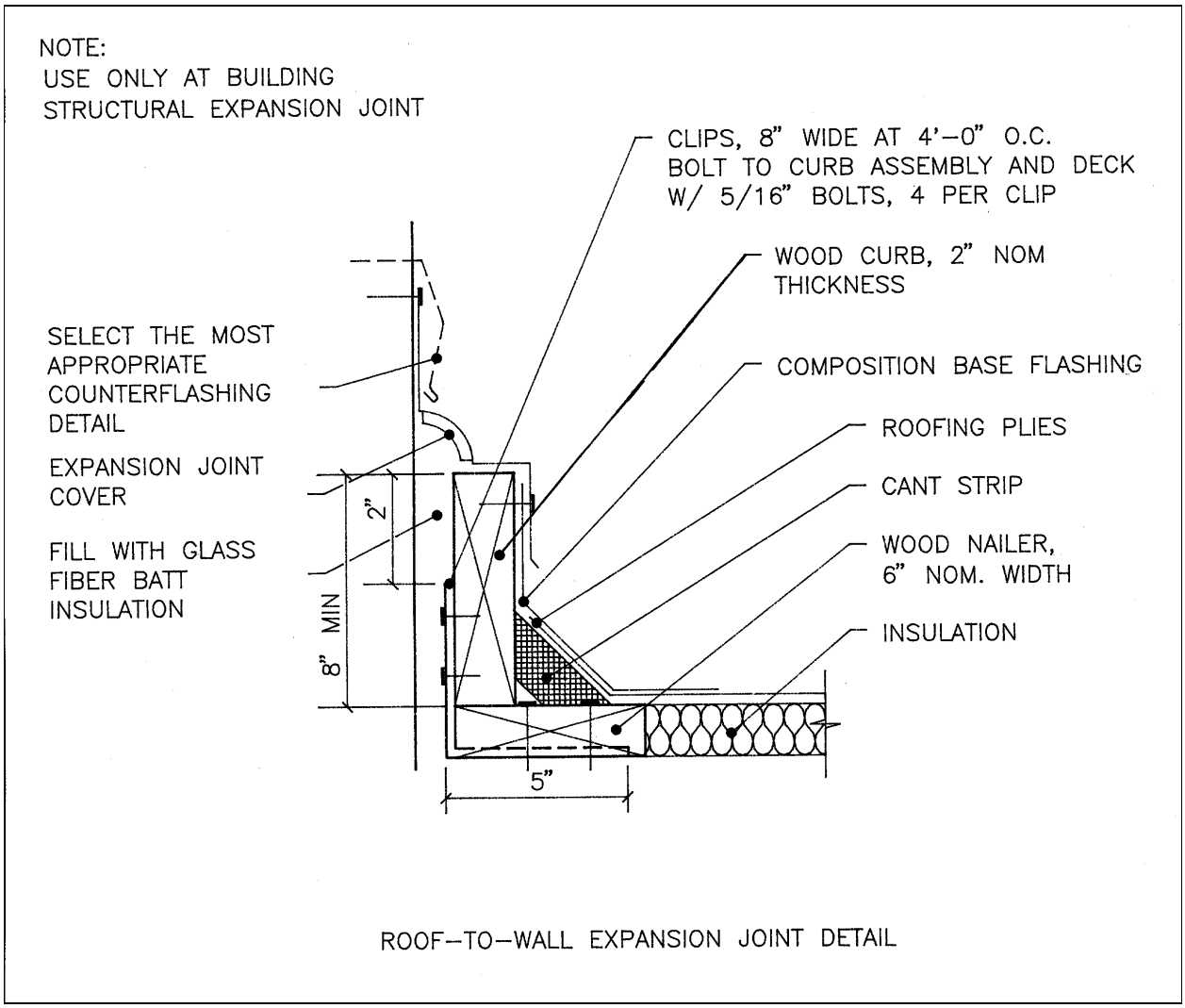
NOTES:

THIS DETAIL IS USED TO RELIEVE MOISTURE VAPOR PRESSURE FROM INSULATION. THE MOISTURE MAY HAVE ENTERED DUE TO LEAKS, FAULTY VAPOR RETARDERS, OR DURING CONSTRUCTION. THE SPACING OF RELIEF VENTS IS DETERMINED BY THE TYPE OF INSULATION USED AND THE AMOUNT OF MOISTURE TO BE RELIEVED.

DETAIL

BUR-20 Roof Relief Vent

MOUNTAIN HOME AFB, IDAHO



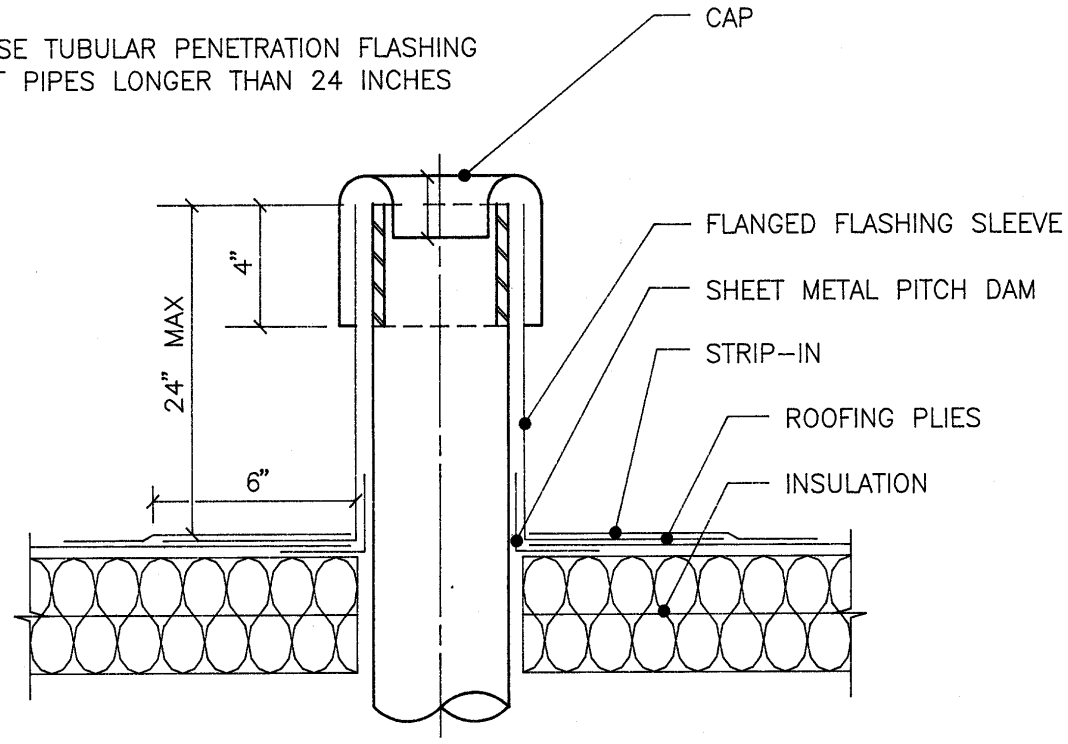
ROOF–TO–WALL EXPANSION JOINT DETAIL

NOTES:

DETAIL

BUR-21 Roof to Wall Expansion Joint

MOUNTAIN HOME AFB, IDAHO



SANITARY VENT PIPE FLASHING DETAIL

NOTES:

DETAIL

BUR-22 Sanitary Vent Pipe

MOUNTAIN HOME AFB, IDAHO

SELECTION GUIDE FOR METALS

DETAIL ITEM	GALVANIZED STEEL	COPPER	LEAD-COATED COPPER
COUNTER FLASHINGS	24 GAUGE	16 OUNCE	16 OUNCE
PRESSURE BARS	1 1/4" x 3/16" x 2"	1 1/4" x 3/16" x 2"	1 1/4" x 3/16" x 2"
CONTINOUS CLEAT	20 GAUGE	20 OUNCE	20 OUNCE
COUNTERFLASHING RECEIVER	20 GAUGE	20 GAUGE	20 GAUGE
GRAVEL STOP FASCIA	24 GAUGE	16 OUNCE	16 OUNCE
SANITARY VENT PIPE FLASHING	24 GAUGE	16 OUNCE	16 OUNCE
TUBULAR PENETRATION FLASHING	24 GAUGE	16 OUNCE	16 OUNCE
PITCH PAN	24 GAUGE	16 OUNCE	16 OUNCE
GENERAL METAL FLASHING	24 GAUGE	16 OUNCE	16 OUNCE

NOTES:

DETAIL
BUR-23 **Selection Guide for Metals**
MOUNTAIN HOME AFB, IDAHO

DO NOT MAKE REPAIRS OR ALTERATIONS TO THIS ROOF

WITHOUT APPROVAL FROM THE BASE CIVIL ENGINEER

THIS ROOF IS UNDER WARRANTY UNTIL ***(1)*** **BY**

MANUFACTURER ***(2)***
ADDRESS
CITY, STATE, ZIP CODE
PHONE: AREA CODE / NUMBER

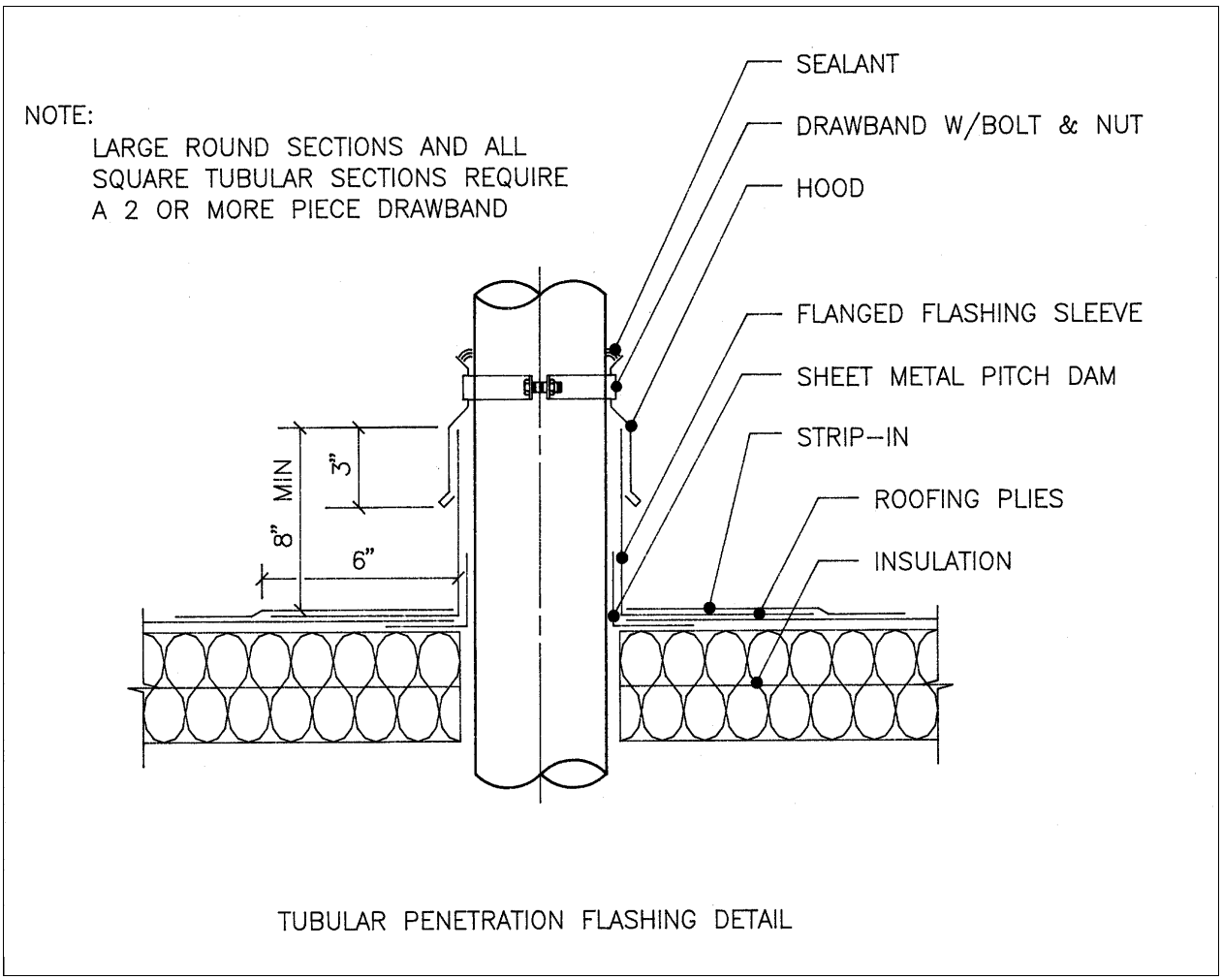
NOTES:

SIGNS - TO BE POSTED AS SPECIFIED

(1) INSERT WARRANTY EXPIRATION DATE ***(20 YEARS FROM FINAL ACCEPTANCE).***

(2) INSERT THE MANUFACTURER'S NAME, ADDRESS, AND PHONE NUMBER.

DETAIL
BUR-24 Sign Information
MOUNTAIN HOME AFB, IDAHO



TUBULAR PENETRATION FLASHING DETAIL

NOTES:

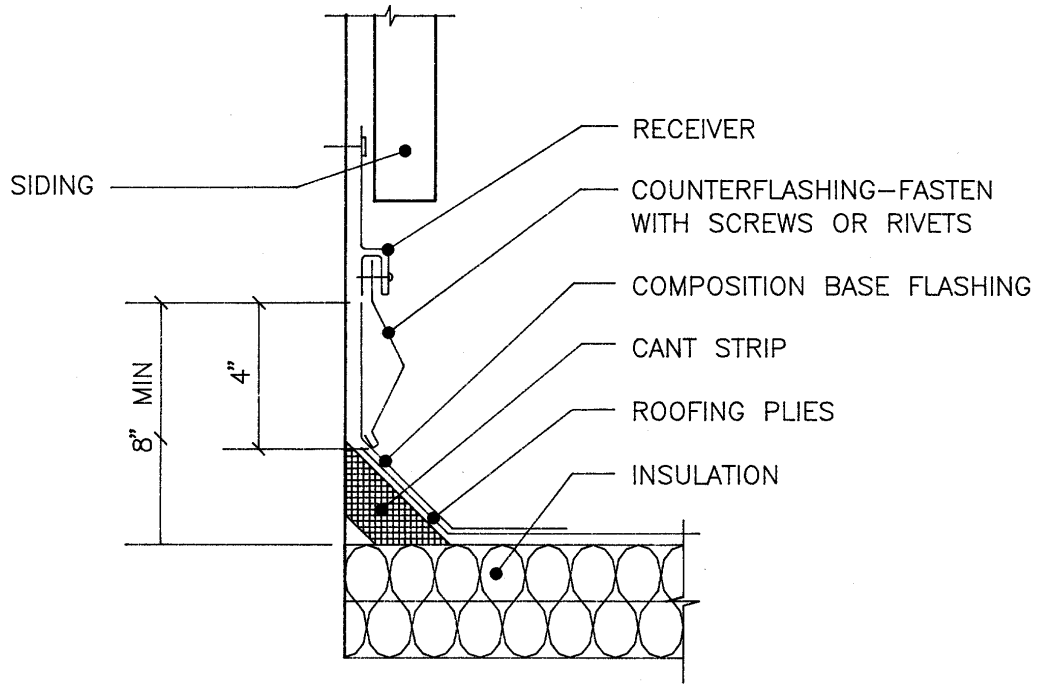
DETAIL

BUR-25 Tubular Penetration Flashing

MOUNTAIN HOME AFB, IDAHO

NOTE:

REMOVE SIDING AS REQUIRED TO INSTALL NEW RECEIVER AND COUNTER FLASHING. WHERE EXISTING FLASHING IS LESS THAN 8", CUT SIDING AS REQUIRED AND REPAINT TO MATCH EXISTING.



WALL FLASHING AT BASE OF SIDING DETAIL

NOTES:

DETAIL

BUR-26 Wall Flashing at Base of Siding

MOUNTAIN HOME AFB, IDAHO

APPENDIX C

ROOFING

SUBMITTALS 1 & 2

SUBMITTAL # 1

BUILT-UP ROOFING (BUR) MANUFACTURER
PRE-AWARD CERTIFICATION SUBMITTAL

The following statement is required from the BUR manufacturer. The BUR manufacturer is defined as the roof membrane product manufacturer who may or may not manufacture the other system components, such as metal or other flashings, insulation, and fasteners.

This is to advise that _____(roofing contractor/subcontractor) is an approved applicator of our roofing system and is capable of obtaining our 20-year labor and materials warranty/guaranty. We will execute the 20-year BUR warranty/guaranty certification upon the successful completion of all work in accordance with the project plans and specifications or as modified to comply with our 20-year roofing system requirements, which ever is most stringent.

We have reviewed the System Summary Sheet for Proj. No. _____ at _____(location). We certify that the built-up roofing systems listed below and described in the attached product literature are suitable for use with the roof system construction specified for this project as it relates to normal wear and exposure to the elements.

We certify that the specified insulations are compatible with the membrane and would qualify for our 20-year materials and labor warranty/guaranty. We accept responsibility for defects or failure of, or improper application of, roof insulation used as a base over which the roofing is applied, except the roof deck. This warranty applies only to total tear-off and replacement.

We understand that proposed changes relating to the roofing system will be submitted for our review and acceptance. A signed copy approving the concept of the change will be returned to the Contracting Officer.

Building Number(s)	**Roofing System Designation (Membrane)**	**(Insulation)**

A technical representative can be made available to attend the pre-construction conference to discuss proper installation procedures for our BUR system. A technical representative will also be available to make at least one in-progress inspection and one final acceptance inspection of the BUR installation.

Roofing Manufacturer
Firm Name:_____

Address:_____

Authorized Representative
Signature:_____

Printed or Typed Name: _____

Signed This _____Day of _____19____

2 Atch
1. BUR System Literature
2. Insulation Manufacturer's Literature

SUBMITTAL # 2

BUILT-UP ROOFING (BUR) SYSTEM
20-YEAR LABOR AND MATERIAL WARRANTY/GUARANTY

WARRANTY COVERAGE:

This system is delivered subject to a full material and workmanship warranty/guaranty for 20 years that guarantees that the manufacturer will pay all costs necessary to maintain the built-up roofing membrane and flashing system in a water-tight condition as a result of the following causes: deterioration from ordinary wear and tear of the elements; poor workmanship on the part of the contractor; defects in materials; defects in the manufacturer's specifications; blisters, bare spots, fishmouths, wrinkles or ridges in the built-up roof; and splits in the built-up roof membrane caused by movement of the roof insulation or any other underlying surface, or material used as a base over which the roof system is applied, excluding the deck. Specific conditions that will« effect warranty/guaranty coverage and exclusions from coverage are not covered by this warranty/guaranty.

The specified roof system is our 20-year system design and the insulations specified are compatible with our materials. As the manufacturer of this system, we also accept responsibility for making repairs to the roofing system at no additional cost to the government, to correct defects in, failure of, or improper application of roof insulation used as a base over which the roof is applied, except the roof deck.

If the manufacturer fails to make required emergency and permanent repairs during the warranty/guaranty period, as stated after notice by telephone from the contracting office, the government may have the work done by others and charge the cost to the manufacturer. The warranty provisions of this contract apply notwithstanding government inspection and acceptance. A separate warranty/guaranty is required for each building. Failure to perform the work resulting in the government having the work performed will not void this warranty/guaranty.

TERMS, CONDITIONS. LIMITATIONS:

Emergency repairs shall be made within 48 hours of receipt of notice by telephone from the contracting officer and weather permitting the manufacturer agrees to permanently repair the affected areas within 30 days by restoring them to a water-tight condition, without cost to the government. If it is determined that leaks were caused by either an exclusion from coverage or a specific condition listed below, the manufacturer will repair the defects and an equitable payment will be made by the government.

EXCLUSIONS FROM COVERAGE:

1. **Natural disasters, acts of God (lightning, hurricanes, tornadoes, sustained winds exceeding 75 MPH as recorded at the nearest meteorological center, earthquakes, hail).**
2. **Acts of negligence or abuse and misuse by government personnel, accidents, vandalism, civil disobedience, war, or damage caused by falling objects.**
3. **Damage by structural failure, settlement, movement, distortion, warpage, or displacement of structure.**
4. **Failure of material or flashings caused by movement of metal work not supplied by manufacturer issuing warranty/guarantee.**
5. **Leaks caused by repairs or alterations of roof system or installation of structures, fixtures or utilities on or through roof without prior written approval of manufacturer.**
6. **Storage of material on roof.**
7. **Moisture entering roof system through walls, copings, or any part of building structure except the roof, including from adjacent building.**
8. **Fire.**
9. **Faulty construction or design of building, including parapet walls, copings, chimneys, skylights, vents, or of roof deck but specifically excluding construction above the deck, i.e., insulation, base sheet, fasteners, adhesive, vapor retarders, and so forth.**
10. **Infiltration or condensation of moisture in or through underlying area; vapor condensation beneath the roof greater than the acceptable ambient moisture content for the given material as established by the appropriate American Society for Testing and Materials (ASTM) standard in effect at the time of installation.**
11. **Damage or leaks attributable to ponding water, defined as water in ponded areas that does not drain or evaporate within a 48 hour period.**
12. **Under no circumstances is the manufacturer responsible for damages to the building, its contents or roof deck.**
13. **Membrane splits caused by structural movement.**

SPECIFIC CONDITIONS THAT WILL AFFECT WARRANTY/GUARANTY COVERAGE:

1. **Failure to use reasonable care in maintenance; failure to follow manufacturer's written maintenance instructions.**
2. **Failure d- owner to make repairs to leaks not covered by manufacturers warranty/guaranty.**
3. **Repair work by any contractor other than BUR manufacturer approved contractor or use of unapproved material.**
4. **Changes in building usage which may affect roof performance unless approved in writing by the BUR manufacturer prior to such change.**

DETERMINATION OF RESPONSIBILITY:

Receipt of notice by telephone or in writing from the contracting officer is evidence that the contracting officer has had the roof examined by a technically qualified representative of the government and has determined, based on this examination. that none of the above causes apply and the manufacturer is obligated to make the repairs.

Within 30 days of receipt of the above notice by the manufacturer that a roofing system defect covered by the warranty/guaranty has been discovered, the manufacturer, to avoid application of the warranty/guarantee must notify the contracting officer in writing of the existence of an exclusion stated herein. Failure to provide such notice will preclude the manufacturer from later disputing the coverage of the warranty/guaranty.

The government has the right to perform both visual and nondestructive evaluations of the roof system, at government expense, any time during the warranty/guaranty period to validate water tightness of the roof system.

After the occurrence of an exclusion from coverage or a specific condition which renders the warranty/guaranty ineffective, the warranty/guaranty shall be allowed to continue as long as the government returns the roofing system to its original condition and the manufacturer is allowed to inspect or oversee the repair. The burden to establish the existence of an exclusion or specific condition is on the manufacturer.

The 20-year coverage period starts from the date the facility or roofing system is accepted by the government from the contractor.

BENEFICIARY

It is understood by the manufacturer and contractor that the warranty/guaranty provided herein shall be for the benefit of the United States government.

BURDEN OF PROOF

The manufacturer shall have the burden of proving by a preponderance of the evidence the existence of a condition which established an exclusion from coverage, or which would render the warranty/guaranty ineffective or null and void.

OTHER WARRANTIES

The warranty contemplated herein shall be in addition to and not in lieu of any warranty/guaranty otherwise applicable to the work or materials used in the contract.

SIGNATURE:

BURS Manufacturer Firm Name _____

Address _____

Authorized Representative's Signature _____ **Date** _____

Authorized Representative's Name _____
(Print or Type)

Title _____

Manufacturer's Warranty/Serial Number _____ **for building Number** _____

located at _____

Warranty/Guaranty expiration date _____

l Atch
BURS Manufacturer
Specification, Description and Recommendation